

Porthcawl Drainage Scheme




GROUND INVESTIGATION FACTUAL REPORT

Report No. Q0281/FR

July 2020

DOCUMENT CONTROL

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0.0. FOREWORD

The following Conditions and Notes on Site Investigation Procedures should be read in conjunction with this report.

0.1. Ground Investigation

0.1.1. General

Recommendations made and opinions expressed in the report are based on the strata observed in the boreholes and excavations, together with the results of site and laboratory tests. No responsibility can be held for conditions which have not been revealed by the Exploratory Holes or which occur between them. Whilst the report may suggest the likely configuration of strata, both between Exploratory Holes and below the maximum depth of investigation, this is only indicative and liability cannot be accepted for its accuracy.

Unless specifically stated, no account has been taken of possible subsidence due to mineral extraction below or close to the site.

0.1.2. Investigation Procedures

Trial Pitting techniques for ground investigation have been employed within the project. All Exploratory Hole operations, sampling and logging of soils, rocks and in-situ testing complies with the recommendations of the British Code of Practice BS 5930 (2015), 'Site Investigations', British Code of Practice BS 10175: 2011 +A1:2013 'Investigation of Potentially Contaminated Sites' and BS 1377: 1990, 'Methods of Test for Soils for Engineering Purposes'. Whilst these techniques allow the maximum data to be obtained in soft ground/ superficial deposits, some disturbance and variation of soft and layered soils is unavoidable. Attention is drawn to this condition whenever it is suspected.

0.1.3. Routine Sampling

Representative disturbed and environmental soil samples of the different strata are taken following completion of logging. Soil samples obtained for testing are sampled and sealed in plastic tubs, borosilicate amber jars or in specialist vessels where required. All samples are returned from site to QG's laboratory for controlled storage within 24 hours of sampling to await test scheduling/requirements.

0.1.4. In-Situ Testing

- TRL DCP Probes
- Soakaway tests

0.1.5. Groundwater

Where possible, the depth of entry of any influx of groundwater is recorded during the course of excavation or boring operations. The rate of inflow into the excavation or borehole is monitored during the course of the excavation or during boring procedures. Upon encountering any water strikes, work is temporarily halted and the water levels monitored for a standard twenty-minute period recording the change in water level at the end of the twenty minutes.

Groundwater conditions observed in the excavations are those appertaining to the period of investigation. It should be noted, however, that groundwater levels are subject to diurnal, seasonal and climatic variations and can also be affected by drainage conditions or other causes.

0.1.6. Retention of Samples

After satisfactory completion of all the scheduled laboratory tests on any sample, the remaining material is discarded. Further to notifying the Engineer/ Client with one week's notice all soil and/or rock samples will be discarded 28 days after submission of the approved final report.

1.0. INTRODUCTION

1.1 General

Upon the instructions of Capita (Project Engineer), on behalf of Bridgend County Borough Council (Client), Quantum Geotechnic Ltd (QGL) has been commissioned to undertake a ground investigation on land located to the west of the Trecco Bay Caravan Park, Porthcawl for the proposed drainage scheme works for Porthcawl town. The purpose of this ground investigation is to determine the existing ground and groundwater conditions on the site to allow the design to proceed.

The approximate Ordnance Survey National Grid Reference of the site is 282673, 177018.

This report presents a factual account of the fieldwork carried out, the strata encountered, groundwater observations and details subsequent laboratory testing undertaken on samples obtained from the investigation.

Other available sources of information that have been consulted include the published geological maps for the area.

General notes on the techniques employed by QGL are described in the Foreword together with the limitations inherent in carrying out site investigation work.

2.0. SITE DETAIL

2.1. Site Description

The ground investigation was undertaken across the site as directed by the Project Engineer. This site is situated to the west of the Trecco Bay Caravan Park, Porthcawl. The site is currently unused rough ground but was formerly used as a municipal caravan park. Its western boundary is located to the east of Coney Beach Amusement Park, with Sandy Bay beach immediately south of the site. The site is mostly flat with a few man made wind break bunds approximately 1.5-2.0m in height, with a circular 'bowl' area in the middle of the site and is between 0 and 3.5mbgl below the level of the surrounding area.

A site location plan can be found as Figure 1 in Appendix I.

2.2. Statutory Service Information

All service information was held by the Project Engineer and was made available to QGL prior to commencement of the intrusive works. Standard QGL procedures for breaking ground were followed and all areas were CAT scanned for presence of buried services.

3.0. GEOLOGY & ENVIRONMENTAL SETTING

3.1. Published Geology

Details of the superficial and solid geology of the site are provided by the British Geological Survey, Sheet 262 ‘*Bridgend*’ (superficial and bedrock edition) – 1:50,000 Scale

Superficial Geology

The geological sheet indicates the natural superficial deposits along the route to be wind blown sands. These are recent deposits located across the site, likely associated with the beach as coastal sand dunes.

No Made Ground deposits are mapped across the site. There is however a possibility Made Ground may be present relating to the road infrastructure across the site.

Solid Geology

The Geological map indicates the solid geology below the site to comprise of Triassic age (Mercia Mudstone Group/Marginal Facies), with Carboniferous Limestone outcropping in the south west corner of the site.

There are two unnamed faults located on/within 50m of the site.

3.2. Hydrology

Sandy Bay beach is located immediately south of the site.

4.0. FIELDWORK

4.1. General

The fieldwork was undertaken between the 17th and 19th June 2020. Full time on site supervision and attendance was provided by an Engineering Geologist from QGL.

All service plans were held onsite, with all site personnel inducted by QGL and briefed of the pertinent Risk Assessments and Method Statements relating to the tasks to be undertaken.

Each area of investigation was fully CAT ('Cable Avoidance Tool') scanned prior to breaking ground.

Summary of Fieldworks

The fieldworks comprised;

- 9 No. Machine Excavated Trial Pits
- Soakaway tests within selected Trial Pits
- TRL DCP Probes adjacent to each Trial Pit
- Sampling of soils for environmental and geotechnical testing

General notes on the techniques employed by Quantum Geotechnic are described in the Foreword together with the limitations inherent in carrying out ground investigation work.

4.2. Exploratory Hole Locations

The exploratory hole locations were set out by QGL in liaison with the Project Engineer. The exploratory hole locations were surveyed upon completion using a Leica dual frequency GPS Model 1250, accurate to 0.005m horizontal and 0.01m vertical.

A site location plan is presented as Figure 1 in Appendix I. The Exploratory Hole co-ordinates and levels are detailed within Table 1.

Table 1: Exploratory Hole Co-Ordinates & Levels

Exploratory Hole ID	Easting	Northing	Height (mAOD)
TP01	282526.465	177197.178	9.77
TP02	282686.029	177213.246	9.07
TP03	282894.295	177212.204	10.03
TP04	282570.013	177060.519	14.38
TP05	282674.490	177005.387	8.84
TP06	282888.951	177053.310	11.98
TP07	282570.652	176948.983	11.84
TP08	282726.555	176882.041	13.25
TP09	282854.505	176896.757	13.85

4.3 Machine Excavated Trial Pits

9 No. Trial Pits were excavated using a JCB 3CX wheeled excavator at the positions shown on the exploratory hole location plan in Appendix I.

This method of investigation allows direct sampling of the near surface deposits for identification purposes, as well as assessment of any salient features and Made Ground or disturbed ground. The trial pits were logged in accordance with BS5930:2015; BS EN ISO 14688-1:2002 and BS EN ISO 14688-2:2004, and supervised at all times by an Engineering Geologist from QGL.

All trial pits were backfilled with compacted layers of arisings upon completion with suitable reinstatement where required.

Geotechnical and Environmental samples were taken within the superficial deposits for laboratory testing purposes.

Details of the Trial Pits, including final depths in metres below ground level (mbgl) are provided in Table 2.

Table 2: Trial Pit Detail

Exploratory Hole ID	Exploratory Hole Type	Final Length (mbgl)	Reason for termination
TP01	Machine Excavated Trial Pit	3.00	Soakaway test to be undertaken
TP02	Machine Excavated Trial Pit	3.20	Significant instability
TP03	Machine Excavated Trial Pit	3.40	Soakaway test to be undertaken
TP04	Machine Excavated Trial Pit	3.00	Significant instability
TP05	Machine Excavated Trial Pit	3.20	Soakaway test to be undertaken
TP06	Machine Excavated Trial Pit	3.30	Significant instability
TP07	Machine Excavated Trial Pit	3.20	Soakaway test to be undertaken
TP08	Machine Excavated Trial Pit	3.00	Significant instability
TP09	Machine Excavated Trial Pit	3.20	Soakaway test to be undertaken

A complete set of Engineering Geologist’s Test Hole logs are presented within Appendix II.

4.4 In-Situ Testing

4.4.1 TRL DCP Probes

The TRL (Transport Research Laboratory) Dynamic Cone Penetrometer (DCP) tests were undertaken adjacent to each Trial Pit. The TRL DCP probe is used for rapid in-situ measurement of the structural properties of existing road pavement constructed with unbound materials. The unit incorporates an 8 kg weight with a drop of 575 mm, and a 20 mm diameter cone fitted to the end of the shaft, allowing measurements to be made down to a depth of approximately 900 mm.

The TRL DCP Probe results are presented in Appendix IV.

4.4.3 Soakaway Tests

Soakaway tests were undertaken within Trial Pits TP01, TP03, TP05, TP07 and TP09 in accordance with BRE 365. The test involves filling a test pit with water and measuring the time taken for the water level to drop.

The Soakaway test results are presented in Appendix III.

4.5. Sampling - General

Sampling of soils was undertaken in accordance with the Specification for the Works as specified by the Engineer. Geotechnical bulk, large bulk and disturbed samples were taken where required within the superficial deposits for strata identification and laboratory testing purposes. In addition, environment samples were taken in amber jars for laboratory testing.

All geotechnical samples were returned from site to QGL's laboratory for controlled storage to await test scheduling/requirements. For specific details of laboratory testing see Section 5.0. Sample type and sample depth was recorded on the Engineering Geologist's Exploratory Hole Logs found within Appendix II.

5.0. LABORATORY TESTING

5.1 General

The laboratory testing was scheduled by the Engineer and comprised a number of geotechnical and environmental tests on selected soil and soil leachate samples obtained during the investigation.

5.2 Geotechnical Laboratory Testing

All the geotechnical soil testing work was carried out in accordance with the procedures stipulated in the various sections of BS 1377:1990 Parts 1 - 9 Methods of test for soils for civil engineering purposes. Table 3 details the tests undertaken.

Table 3: Geotechnical Tests Undertaken

Type of Test	No of Tests
Moisture Content	5
Liquid Limit, Plastic Limit & Plasticity Index	5
PSD Wet Sieve	9
Suite D BRE Suite (Pyrite present)(Soil)	5

Results of the geotechnical testing undertaken are presented within Appendix V.

5.3 Geoenvironmental Laboratory Testing

Geoenvironmental testing was carried out on selected soil and soil leachate samples gained from the ground investigation. The purpose of the testing is to gain a holistic view of any raised levels of contaminants that may exist onsite. Table 4 details Geo-Environmental tests undertaken on selected soil samples.

Table 4: Geoenvironmental Tests Undertaken

Type of Test	No of Tests
Suite E (Soil)	5
Suite K (Soil)	3
Faecal Coliforms (microbiological analysis)	5
Clostridium Perfringens (microbiological analysis)	5

Results of the geotechnical testing undertaken are presented within Appendix VI.

6.0. REFERENCES

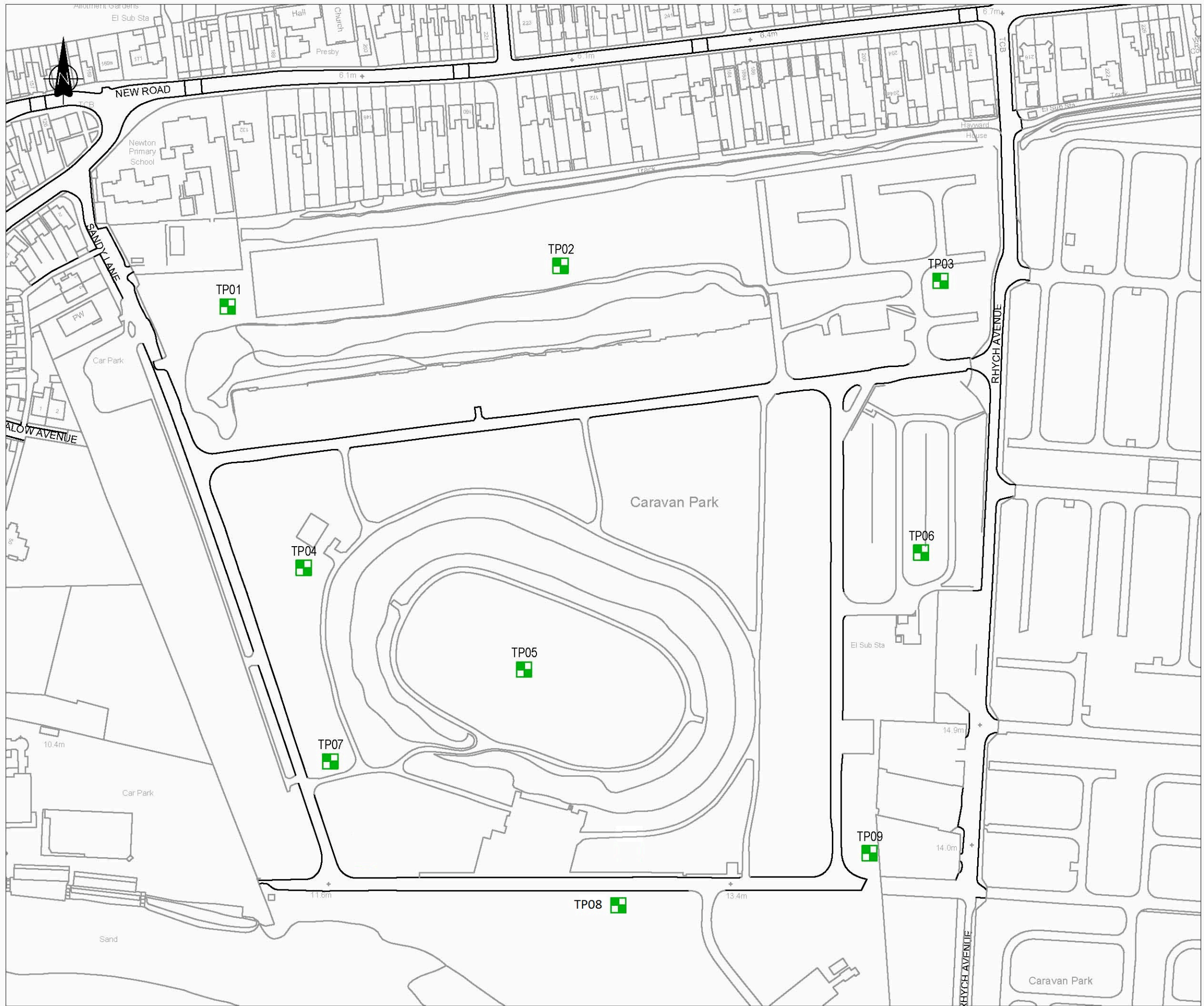
British Geological Survey: -

- Geological Survey, Sheet 262 '*Bridgend*' (superficial and bedrock edition) – 1:50,000 Scale

Specialist Publications:-

- British Code of Practice BS 5930: (2015) '*Code of Practice for Site Investigations*'
- British Code of Practice BS 1377: (1990) '*Methods of test for soils for civil engineering purposes*'.
- *British Code of Practice BS EN ISO 14688-1:2002+A2:2013 Geotechnical investigation and testing.*
- *British Code of Practice BS EN ISO 14688-2:2004+A2:2013 Geotechnical investigation and testing.*
- *Health and Safety Executive Guidance Note EH40/90*

APPENDIX I – SITE PLANS



KEY

 TRIAL PIT

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 Agyrhyrchir y map hwn o ddeunydd yr Ordnance Survey gyda chaniatâd yr Ordnance Survey ar ran Rheolwr Llyfrfa Ei Mawrhydi © Hawlfraint y Goron. Mae atgynhyrchu heb ganiatâd yn torri hawlfraint y Goron a gall hyn arwain at erlyniad neu achos sifil. (Rhif trwydded 100023405, 2008).

Rev	LB	IL	App'd	DESCRIPTION	DATE
P01	LB	IL		FIRST ISSUE	24/03/2020

Purpose of Issue
S2 - FIT FOR INFORMATION

Classification
COMMERCIAL IN CONFIDENCE

Client
BRIDGEND COUNTY BOROUGH COUNCIL

Project
PORHCRAWL DRAINAGE STRATEGY

Drawing
PROPOSED EXPLORATORY HOLE LOCATION PLAN

Scale @ A3	Drawn	Checked	Approved
1:2,000	LB	IL	

Project No.	Date
CS098811	24-MAR-2020

Drawing Identifier	BS1192 Compliant
Project - Originator - Zone - Level - File Type - Role - Number	rev
98811-CAP-75-XX-DR-C-7502	P01



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APPENDIX II – ENGINEERING GEOLOGIST’S TRIAL PIT LOGS

Contract : Porthcawl Drainage Scheme

Trial Pit No.

Client : Bridgend County Council

TP01

Dates : 17/6/20 - 17/6/20

Job Number : Q0281

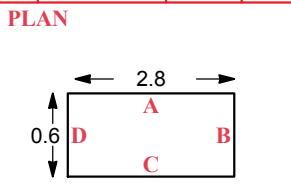
Ground Level : 9.77 m A.O.D.
Level to Ordnance Datum

Location : Within park area

Engineer : Capita

Coordinates: 282526.47 E
177197.18 N
Co-ordinates to National Grid

m B.G.L.	Samples		Tests		Strata				WATER
	Depth	Type No.	Depth	Test Results	Depth (Thickness)	Description	Legend	Red. Level A.O.D.	
1	0.10 -	ES1			0.20	Grass over brown slightly gravelly sandy SILT with frequent rootlets. Gravel is fine to coarse sub-angular to sub-rounded Siltstone and Sandstone.	x o x x x x x o x	9.57	
	0.20 - 0.50	ES2			0.20				
	0.50 - 1.00	B1							
2	1.00 -	ES3							
					2.80				
3	2.00 -	B2 ES4							
	3.00 -	B3			3.00	TP terminated at 3.00mbgl sides collapsing, unable to progress		6.77	



Groundwater: No ground water encountered

Stability: Unstable collapsing below 1.50m

Shoring: N/A

Remarks : TP marked out by QGL in liaison with Capita. Service plans checked and area CAT scanned. Soakaway test undertaken within pit at 1.70mbgl

Equipment Used: JCB 3CX wheeled excavator using a 2ft bucket

Contract : Porthcawl Drainage Scheme

**Trial Pit No.
TP01**

Client : Bridgend County Council

Dates : 17/6/20 - 17/6/20

Job Number : Q0281

Ground Level : 9.77 m A.O.D.
Level to Ordnance Datum

Location : Within park area

Engineer : Capita

Coordinates: 282526.47 E
177197.18 N
Co-ordinates to National Grid



Plas Newydd
SA4 0FQ
Tel: 01554 744880
Fax:
email: enquiries@quantumgeotech.co.uk

Operator:
Garth Plant

Logged By:
S Picton

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All measurements in
metres unless
otherwise stated



Contract : Porthcawl Drainage Scheme

Trial Pit No.

Client : Bridgend County Council

TP02

Dates : 17/6/20 - 17/6/20

Job Number : Q0281

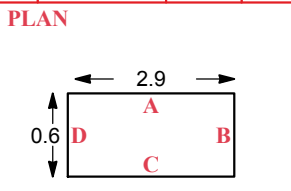
Ground Level : 9.07 m A.O.D.
Level to Ordnance Datum

Location : Within park area

Engineer : Capita

Coordinates: 282686.03 E
177213.25 N
Co-ordinates to National Grid

m B.G.L.	Samples		Tests		Strata				WATER
	Depth	Type No.	Depth	Test Results	Depth (Thickness)	Description	Legend	Red. Level A.O.D.	
1	0.20 -	ES1			0.20	MADE GROUND - Grass over brown slightly gravelly sandy SILT with frequent rootlets. Gravel is fine to coarse sub-angular to sub-rounded Siltstone and Sandstone.		8.87	
	0.50 - 1.00		B1			0.20			
	0.50 -	ES2			1.00				
	1.00 -	ES3			1.20	MADE GROUND - Black grey slightly silty sandy GRAVEL. Gravel is fine to coarse sub-angular to sub-rounded concrete and brick with frequent pieces of metal		7.87	
	1.20 -	B2			0.20				
					1.40	Light brown medium to fine SAND		7.67	
2	2.00 -	B3			1.80				
		ES4							
3	3.00 -	B4			3.20	TP terminated at 3.20mbgl sides collapsing, unable to progress		5.87	



Groundwater: No ground water encountered

Stability: Unstable collapsing below 1.50m

Shoring: N/A

Remarks : TP marked out by QGL in liaison with Capita. Service plans checked and area CAT scanned

Equipment Used: JCB 3CX wheeled excavator using a 2ft bucket

Contract : Porthcawl Drainage Scheme

**Trial Pit No.
TP02**

Client : Bridgend County Council

Dates : 17/6/20 - 17/6/20

Job Number : Q0281

Ground Level : 9.07 m A.O.D.
Level to Ordnance Datum

Location : Within park area

Engineer : Capita

Coordinates: 282686.03 E
177213.25 N
Co-ordinates to National Grid



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Garth Plant

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Contract : Porthcawl Drainage Scheme

Trial Pit No.

Client : Bridgend County Council

TP03

Dates : 17/6/20 - 17/6/20

Job Number : Q0281

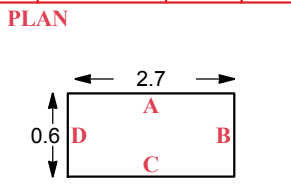
Ground Level : 10.03 m A.O.D.
Level to Ordnance Datum

Location : Within park area

Engineer : Capita

Coordinates: 282894.30 E
177212.20 N
Co-ordinates to National Grid

m B.G.L.	Samples		Tests		Strata				WATER
	Depth	Type No.	Depth	Test Results	Depth (Thickness)	Description	Legend	Red. Level A.O.D.	
1	0.20 -	ES1			0.20	MADE GROUND - Grass over brown slightly gravelly sandy SILT with frequent rootlets. Gravel is fine to coarse sub-angular to sub-rounded Siltstone and Sandstone.	[Cross-hatch pattern]	9.83	
					0.20	MADE GROUND - Black grey slightly silty sandy GRAVEL with frequent sheets of metal and glass. Gravel is fine to coarse sub-angular to sub-rounded Siltstone, Limestone, Flint, concrete and brick.			
	0.50 -	B1 ES2			0.50	Light brown medium to fine SAND with low boulder content. Boulders are rounded to sub-rounded Sandstone.	[Dotted pattern]	9.53	
2	1.00 -	B2 ES3							
	2.00 - 3.00 2.00 -	B3 ES4			2.90				
3					3.40	TP terminated at 3.40mbgl sides collapsing, unable to progress		6.63	



Groundwater: No ground water encountered

Stability: Unstable collapsing below 1.50m

Shoring: N/A

Remarks : TP marked out by QGL in liaison with Capita. Service plans checked and area CAT scanned. Soakaway test undertaken within pit at 1.50mbgl

Equipment Used: JCB 3CX wheeled excavator using a 2ft bucket

Contract : Porthcawl Drainage Scheme

**Trial Pit No.
TP03**

Client : Bridgend County Council

Dates : 17/6/20 - 17/6/20

Job Number : Q0281

Ground Level : 10.03 m A.O.D.
Level to Ordnance Datum

Location : Within park area

Engineer : Capita

Coordinates: 282894.30 E
177212.20 N
Co-ordinates to National Grid



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Contract : Porthcawl Drainage Scheme

Trial Pit No.

Client : Bridgend County Council

TP04

Dates : 19/6/20 - 19/6/20



Job Number : Q0281

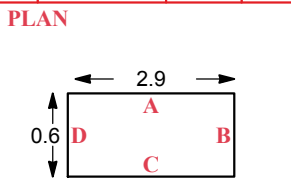
Ground Level : 14.38 m A.O.D.
Level to Ordnance Datum

Location : Within park area

Engineer : Capita

Coordinates: 282570.01 E
177060.52 N
Co-ordinates to National Grid

m B.G.L.	Samples		Tests		Strata			WATER
	Depth	Type No.	Depth	Test Results	Depth (Thickness)	Description	Legend	
1	0.20 -	ES1			0.10	MADE GROUND - Grass over brown slightly gravelly sandy SILT with frequent rootlets. Gravel is fine to coarse sub-angular to sub-rounded Siltstone and Sandstone and rare bricks and pieces of tarmac. Light brown medium to fine SAND		14.28
	0.50 - 1.00	B1			0.10			
	0.50 -	ES2						
2	1.00 - 2.00	B2			2.90			
	1.00 -	ES3						
3	2.00 - 3.00	B3			3.00	TP terminated at 3.00mbgl sides collapsing, unable to progress		11.38
	2.00 -	ES4						



Groundwater: No ground water encountered

Stability: Unstable collapsing below 1.50m

Shoring: N/A

Remarks : TP marked out by QGL in liaison with Capita. Service plans checked and area CAT scanned

Equipment Used: JCB 3CX wheeled excavator using a 2ft bucket

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	Garth Plant	S Picton	1 Of 2	4		

Contract : Porthcawl Drainage Scheme

**Trial Pit No.
TP04**

Client : Bridgend County Council

Dates : 19/6/20 - 19/6/20

Job Number : Q0281

Ground Level : 14.38 m A.O.D.
Level to Ordnance Datum

Location : Within park area

Engineer : Capita

Coordinates: 282570.01 E
177060.52 N
Co-ordinates to National Grid



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otherwise stated



Contract : Porthcawl Drainage Scheme

**Trial Pit No.
TP05**

Client : Bridgend County Council

Dates : 18/6/20 - 18/6/20

Job Number : Q0281

Ground Level : 8.84 m A.O.D.
Level to Ordnance Datum

Location : Within park area

Engineer : Capita

Coordinates: 282674.49 E
177005.39 N
Co-ordinates to National Grid



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otherwise stated



Contract : Porthcawl Drainage Scheme							Trial Pit No.		
Client : Bridgend County Council							TP06		
Dates : 17/6/20 - 17/6/20				Job Number : Q0281		Ground Level : 11.98 m A.O.D. <i>Level to Ordnance Datum</i>			
Location : Within park area				Engineer : Capita		Coordinates: 282888.95 E 177053.31 N <i>Co-ordinates to National Grid</i>			
m B.G.L.	Samples		Tests		Strata			WATER	
	Depth	Type No.	Depth	Test Results	Depth (Thickness)	Description	Legend		Red. Level A.O.D.
1	0.20 -	ES1			0.20	Grass over brown slightly gravelly sandy SILT with frequent rootlets. Gravel is fine to coarse sub-angular to sub-rounded Siltstone and Sandstone.		11.78	
	0.50 - 1.00 0.50 -	B1 ES2			0.20	Light brown medium to fine SAND			
2	1.00 -	ES3			3.10				
	2.00 -	B2 ES4							
3	3.30 -	B3			3.30	TP terminated at 3.30mbgl sides collapsing, unable to progress		8.68	
PLAN 			Groundwater: No ground water encountered Stability: Unstable collapsing below 2.00m Shoring: N/A			Remarks : TP marked out by QGL in liaison with Capita. Service plans checked and area CAT scanned			
Equipment Used: JCB 3CX wheeled excavator using a 2ft bucket									
 Plas Newydd SA4 0FQ Tel: 01554 744880 Fax: email: enquiries@quantumgeotech.co.uk				Operator: Garth Plant Logged By: S Picton		Sheet No. 1 Of 2 m Per Page 4		All measurements in metres unless otherwise stated	

Contract : Porthcawl Drainage Scheme

**Trial Pit No.
TP06**

Client : Bridgend County Council

Dates : 17/6/20 - 17/6/20

Job Number : Q0281

Ground Level : 11.98 m A.O.D.
Level to Ordnance Datum

Location : Within park area

Engineer : Capita

Coordinates: 282888.95 E
177053.31 N
Co-ordinates to National Grid



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Fax:
email: enquiries@quantumgeotech.co.uk

Operator:
Garth Plant

Logged By:
S Picton

Sheet No.
2 Of 2

m Per
Page

All measurements in
metres unless
otherwise stated



Contract : Porthcawl Drainage Scheme

Trial Pit No.

Client : Bridgend County Council

TP07

Dates : 18/6/20 - 18/6/20

Job Number : Q0281

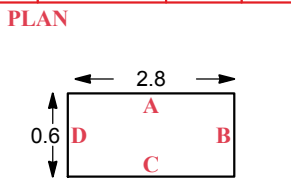
Ground Level : 11.84 m A.O.D.
Level to Ordnance Datum

Location : Within park area

Engineer : Capita

Coordinates: 282570.65 E
176948.98 N
Co-ordinates to National Grid

m B.G.L.	Samples		Tests		Strata			WATER
	Depth	Type No.	Depth	Test Results	Depth (Thickness)	Description	Legend	
1	0.10 -	ES1			0.05	MADE GROUND - Grass over brown slightly gravelly sandy SILT with frequent rootlets. Gravel is fine to coarse sub-angular to sub-rounded Siltstone and Sandstone. MADE GROUND - Light brown medium to fine SAND (Reworked natural ground) MADE GROUND - Brown slightly silty sandy GRAVEL. Gravel is fine to coarse sub-angular to sub-rounded Siltstone, Limestone and Flint Light brown medium to fine SAND		11.79
	0.30 -	ES2			0.25			11.54
	0.50 -	B1			0.20			11.34
2	1.00 - 2.00	B2			2.70			
	1.00 -	ES3						
3	2.00 - 3.00	B3			3.20	TP terminated at 3.20mbgl sides collapsing, unable to progress		8.64
	2.00 -	ES4						



Groundwater: No ground water encountered

Stability: Unstable collapsing below 1.50m

Shoring: N/A

Remarks : TP marked out by QGL in liaison with Capita. Service plans checked and area CAT scanned. Soakaway test undertaken within pit at 1.30mbgl

Equipment Used: JCB 3CX wheeled excavator using a 2ft bucket

Contract : Porthcawl Drainage Scheme

**Trial Pit No.
TP07**

Client : Bridgend County Council

Dates : 18/6/20 - 18/6/20

Job Number : Q0281

Ground Level : 11.84 m A.O.D.
Level to Ordnance Datum

Location : Within park area

Engineer : Capita

Coordinates: 282570.65 E
176948.98 N
Co-ordinates to National Grid



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2 Of 2

m Per
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All measurements in
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Contract : Porthcawl Drainage Scheme

Trial Pit No.

Client : Bridgend County Council

TP08

Dates : 18/6/20 - 18/6/20



Job Number : Q0281

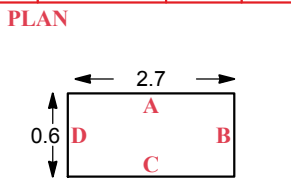
Ground Level : 13.25 m A.O.D.
Level to Ordnance Datum

Location : Within park area

Engineer : Capita

Coordinates: 282726.56 E
176882.04 N
Co-ordinates to National Grid

m B.G.L.	Samples		Tests		Strata			WATER
	Depth	Type No.	Depth	Test Results	Depth (Thickness)	Description	Legend	
1	0.20 -	ES1			0.20	MADE GROUND - Grass over brown slightly gravelly sandy SILT with frequent rootlets. Gravel is fine to coarse sub-angular to sub-rounded Siltstone and Sandstone. MADE GROUND - Brown slightly silty sandy GRAVEL. Gravel is fine to coarse sub-angular to sub-rounded Siltstone, Limestone and Flint Light brown medium to fine SAND		13.05
					0.20			
	0.50 - 1.00	B1			0.10		12.95	
					0.50 -			ES2
2	1.00 - 2.00	B2	1.00 -	ES3	2.70			
3	2.00 -	ES4	3.00	TP terminated at 3.00mbgl sides collapsing, unable to progress	10.25			



Groundwater: No ground water encountered

Stability: Unstable collapsing below 2.00m

Shoring: N/A

Remarks : TP marked out by QGL in liaison with Capita. Service plans checked and area CAT scanned

Equipment Used: JCB 3CX wheeled excavator using a 2ft bucket

	Plas Newydd SA4 0FO Tel: 01554 744880 Fax: email: enquiries@quantumgeotech.co.uk	Operator: Garth Plant	Logged By: S Picton	Sheet No. 1 Of 2	m Per Page 4	All measurements in metres unless otherwise stated	
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Contract : Porthcawl Drainage Scheme

**Trial Pit No.
TP08**

Client : Bridgend County Council

Dates : 18/6/20 - 18/6/20

Job Number : Q0281

Ground Level : 13.25 m A.O.D.
Level to Ordnance Datum

Location : Within park area

Engineer : Capita

Coordinates: 282726.56 E
176882.04 N
Co-ordinates to National Grid



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Operator:
Garth Plant

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Sheet No.
2 Of 2

m Per
Page

All measurements in
metres unless
otherwise stated



Contract : Porthcawl Drainage Scheme	Trial Pit No.
Client : Bridgend County Council	TP09

Dates : 18/6/20 - 18/6/20	Job Number : Q0281	Ground Level : 13.85 m A.O.D. <i>Level to Ordnance Datum</i>
Location : Within park area	Engineer : Capita	Coordinates: 282854.51 E 176896.76 N <i>Co-ordinates to National Grid</i>

m B.G.L.	Samples		Tests		Strata				WATER
	Depth	Type No.	Depth	Test Results	Depth (Thickness)	Description	Legend	Red. Level A.O.D.	
1	0.20 -	ES1				Grass over light brown medium to fine SAND	[Dotted Pattern]		
	0.50 -	B1 ES2							
	1.00 -	B2 ES3							
2	2.00 -	B3 ES4			3.20				
3	3.00 -	B4			3.20	TP terminated at 3.20mbgl sides collapsing, unable to progress		10.65	

PLAN	Groundwater: No ground water encountered	Remarks : TP marked out by QGL in liaison with Capita. Service plans checked and area CAT scanned. Soakaway test undertaken within pit at 1.20mbgl
	Stability: Unstable collapsing below 2.00m	
	Shoring: N/A	

Equipment Used: JCB 3CX wheeled excavator using a 2ft bucket

Contract : Porthcawl Drainage Scheme

**Trial Pit No.
TP09**

Client : Bridgend County Council

Dates : 18/6/20 - 18/6/20

Job Number : Q0281

Ground Level : 13.85 m A.O.D.
Level to Ordnance Datum

Location : Within park area

Engineer : Capita

Coordinates: 282854.51 E
176896.76 N
Co-ordinates to National Grid



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Operator:
Garth Plant

Logged By:
S Picton

Sheet No.
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m Per
Page

All measurements in
metres unless
otherwise stated

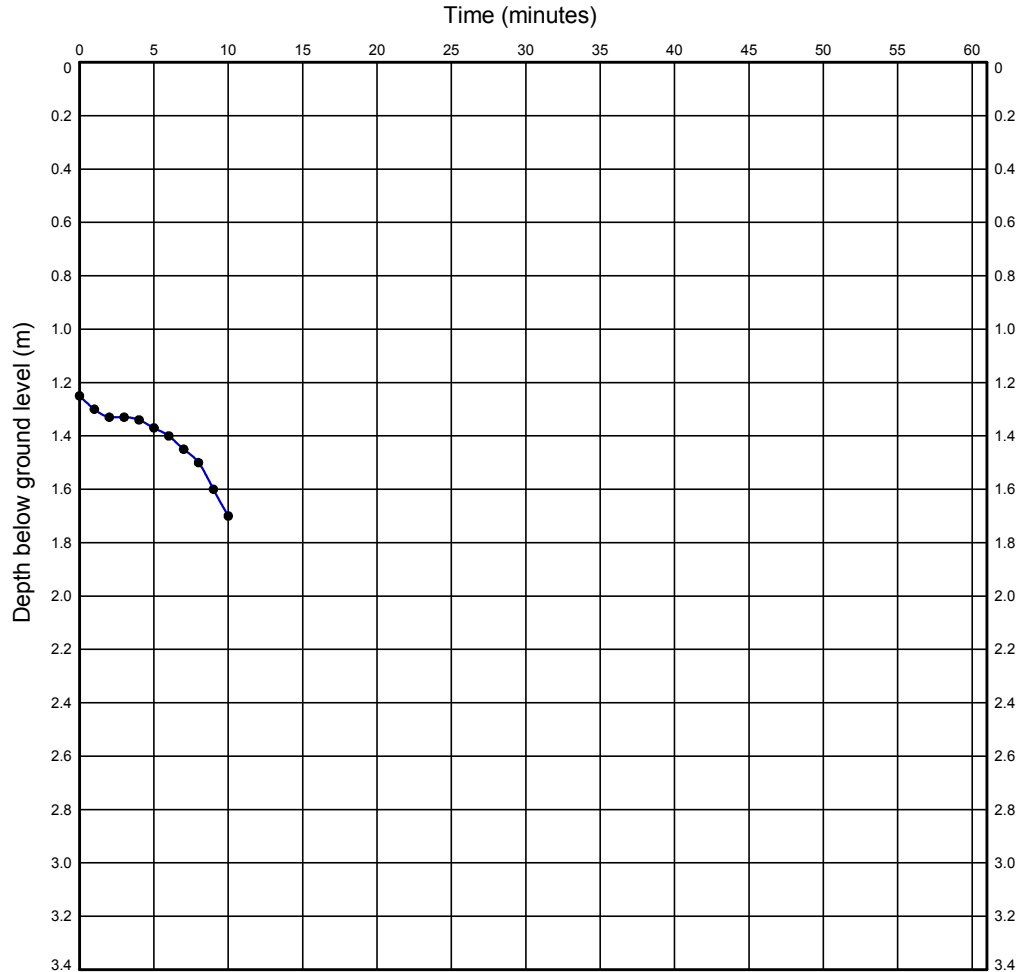


APPENDIX III – SOAKAWAY TEST RESULTS

SOAKAWAY TEST CALCULATION SHEET

Field Observations from soakaway trial pit

Time (Minutes)	Depth of water from ground level (m)
0.0	1.25
1.0	1.3
2.0	1.33
3.0	1.33
4.0	1.34
5.0	1.37
6.0	1.4
7.0	1.45
8.0	1.5
9.0	1.6
10.0	1.7



Remarks: Fully drained at 10 minutes

Soakaway test for soil infiltration rate
design method based on BRE Digest 365

Permeability Test on Strata

Trial Pit Depth	1.700 m	$V_{p75-25} =$	0.378 m ³
Trial Pit Length	2.800 m	$a_{p50} =$	3.210 m ²
Trial Pit Width	0.600 m	$t_{p75-25} =$	4.000 minutes
Effective Depth	0.450 m		
Outflow Time	4 mins from 75% to 25% full		

f = 4.9065E-4 m/sec

Contract : Porthcawl Drainage Scheme

**Point Plotted
SA01,2**

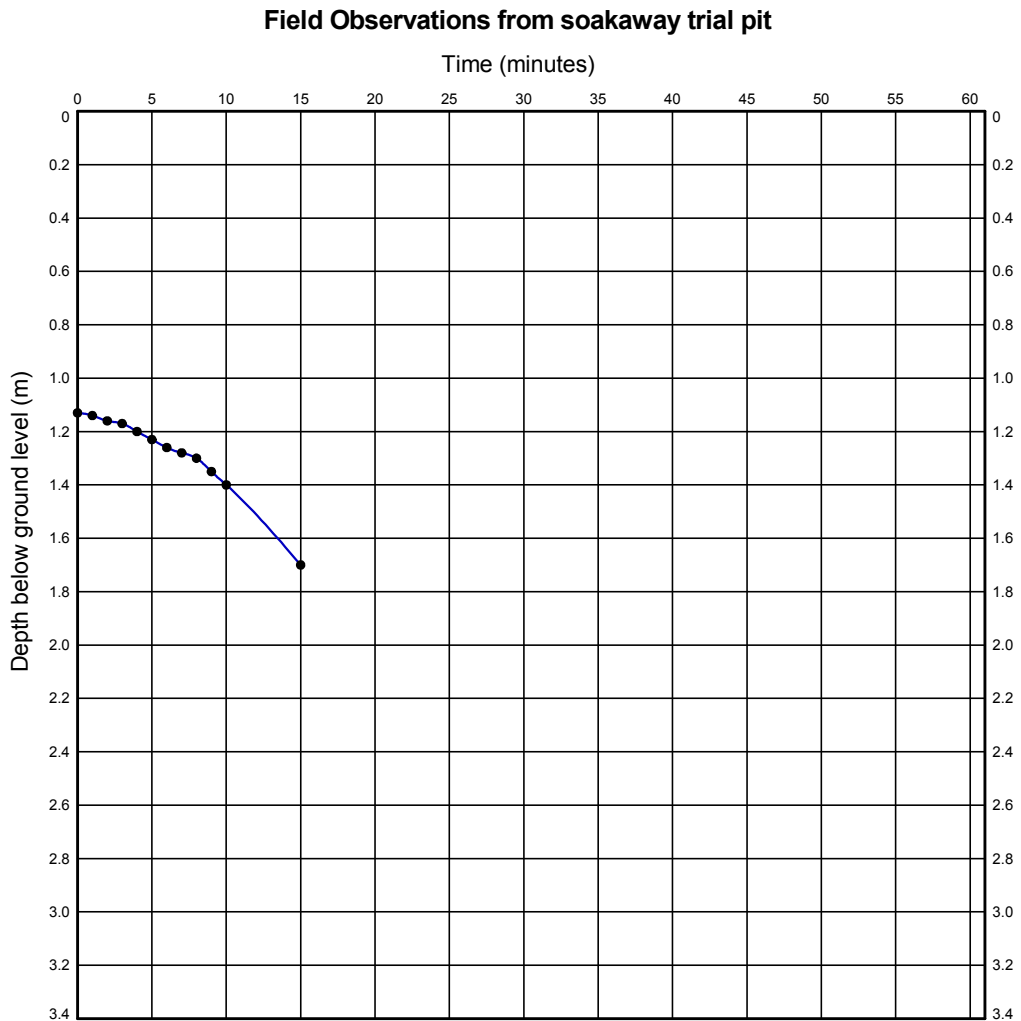
Client : Bridgend County Council

Job Number : Q0281

Engineer : Capita

SOAKAWAY TEST CALCULATION SHEET

Time (Minutes)	Depth of water from ground level (m)
0.0	1.13
1.0	1.14
2.0	1.16
3.0	1.17
4.0	1.2
5.0	1.23
6.0	1.26
7.0	1.28
8.0	1.3
9.0	1.35
10.0	1.4
15.0	1.7



Remarks: Fully drained at 15 minutes

Soakaway test for soil infiltration rate
design method based on BRE Digest 365

Permeability Test on Strata

Trial Pit Depth	1.700 m	$V_{p75-25} =$	0.479 m ³
Trial Pit Length	2.800 m	$a_{p50} =$	3.618 m ²
Trial Pit Width	0.600 m	$t_{p75-25} =$	5.000 minutes
Effective Depth	0.570 m		
Outflow Time	5 mins from 75% to 25% full		

f = 4.4113E-4 m/sec



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Date of Test: 17/06/2020

All measurements in
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Figure No.

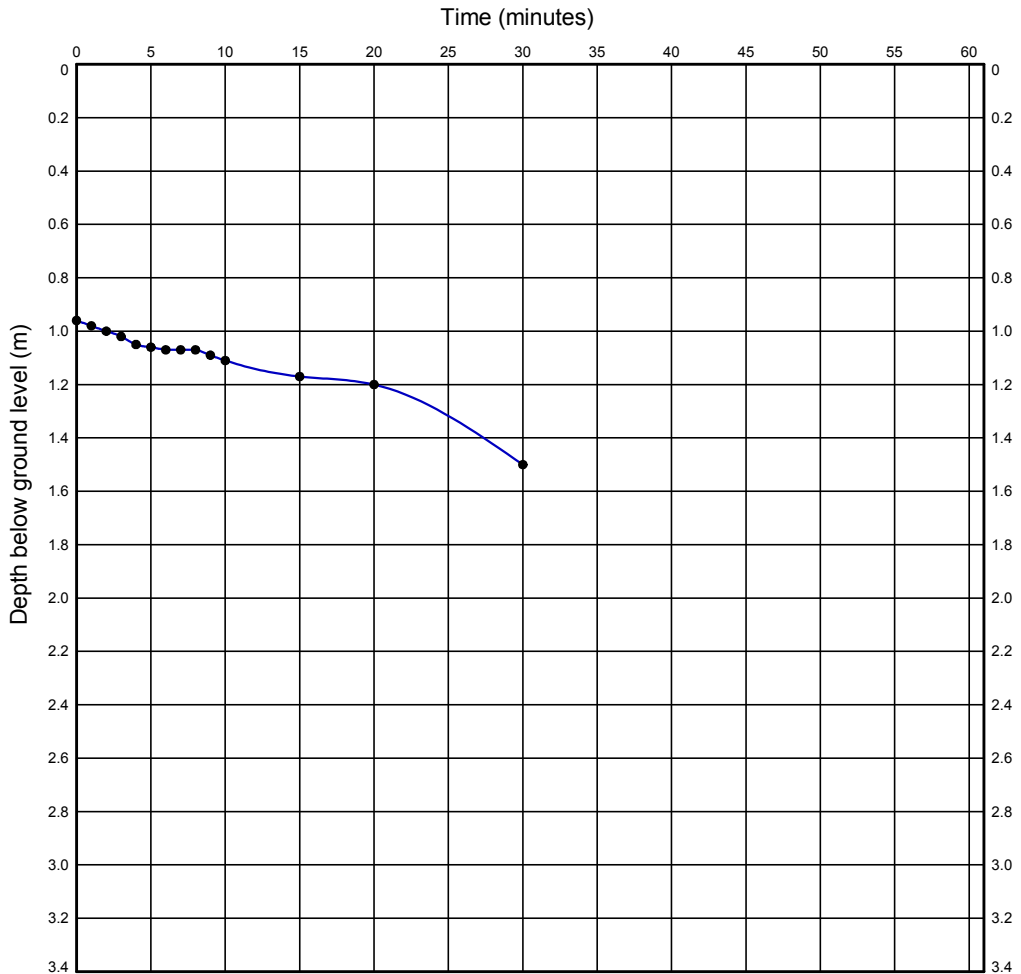
2

Project File: Q0281.GPJ

SOAKAWAY TEST CALCULATION SHEET

Field Observations from soakaway trial pit

Time (Minutes)	Depth of water from ground level (m)
0.0	0.96
1.0	0.98
2.0	1
3.0	1.02
4.0	1.05
5.0	1.06
6.0	1.07
7.0	1.07
8.0	1.07
9.0	1.09
10.0	1.11
15.0	1.17
20.0	1.2
30.0	1.5



Remarks: Fully drained at 30 minutes

Soakaway test for soil infiltration rate
design method based on BRE Digest 365

Permeability Test on Strata

Trial Pit Depth	1.500 m	$V_{p75-25} =$	0.437 m ³
Trial Pit Length	2.700 m	$a_{p50} =$	3.402 m ²
Trial Pit Width	0.600 m	$t_{p75-25} =$	15.500 minutes
Effective Depth	0.540 m		
Outflow Time	15.5 mins from 75% to 25% full		

$f = 1.3825E-4$ m/sec



Contract : Porthcawl Drainage Scheme

Point Plotted
SA03,2

Client : Bridgend County Council

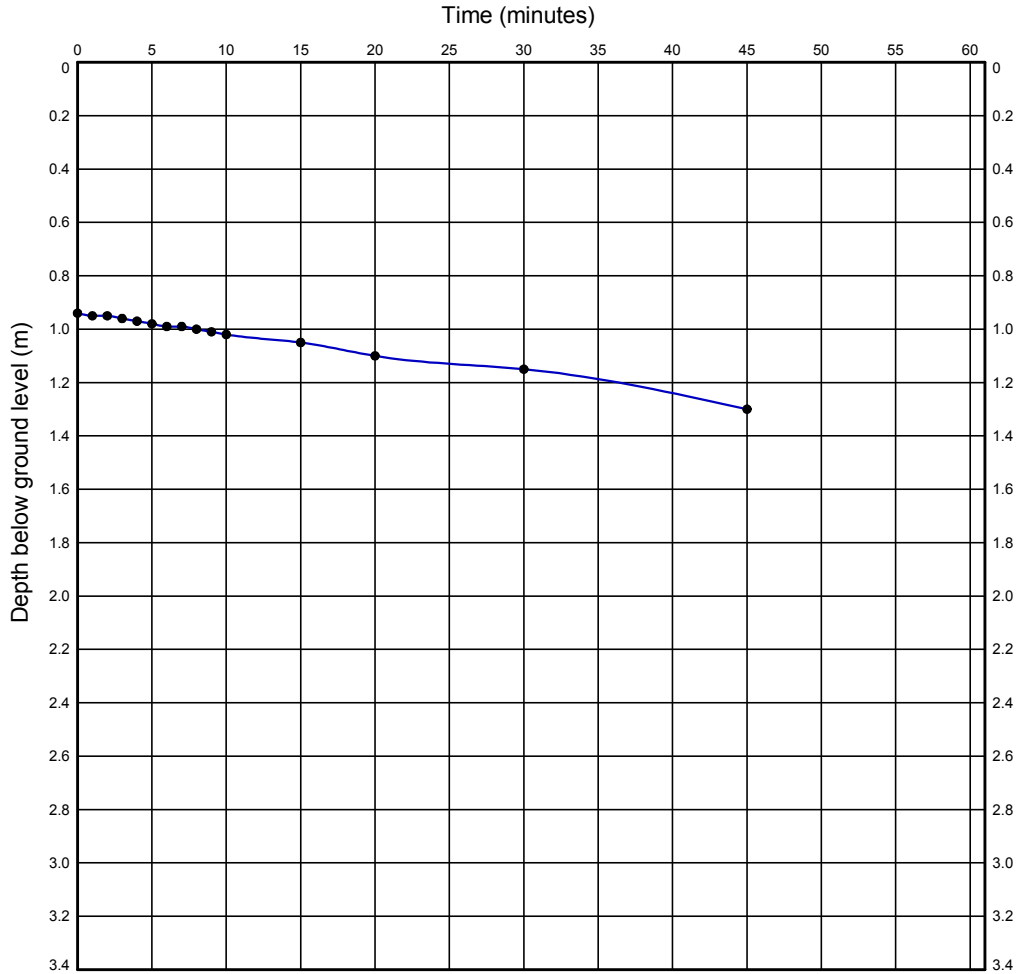
Job Number : Q0281

Engineer : Capita

SOAKAWAY TEST CALCULATION SHEET

Field Observations from soakaway trial pit

Time (Minutes)	Depth of water from ground level (m)
0.0	0.94
1.0	0.95
2.0	0.95
3.0	0.96
4.0	0.97
5.0	0.98
6.0	0.99
7.0	0.99
8.0	1
9.0	1.01
10.0	1.02
15.0	1.05
20.0	1.1
30.0	1.15
45.0	1.3



Remarks: Fully drained at 45 minutes

Soakaway test for soil infiltration rate design method based on BRE Digest 365

Permeability Test on Strata

Trial Pit Depth	1.500 m	$V_{p75-25} =$	0.292 m ³
Trial Pit Length	2.700 m	$a_{p50} =$	2.808 m ²
Trial Pit Width	0.600 m	$t_{p75-25} =$	25.000 minutes
Effective Depth	0.360 m		
Outflow Time	25 mins from 75% to 25% full		

f = 6.9231E-5 m/sec



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Project File: Q0281.GPJ

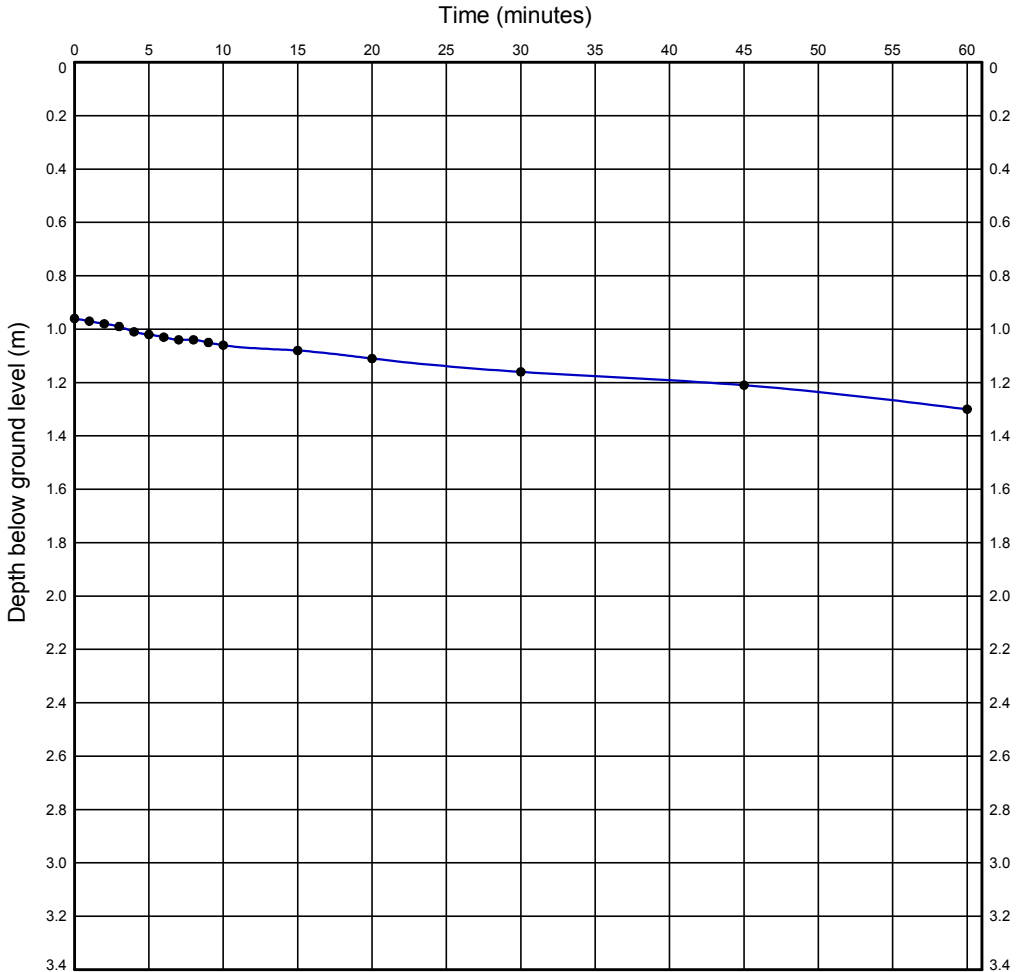
All measurements in metres unless otherwise stated

Figure No.
5

SOAKAWAY TEST CALCULATION SHEET

Field Observations from soakaway trial pit

Time (Minutes)	Depth of water from ground level (m)
0.0	0.96
1.0	0.97
2.0	0.98
3.0	0.99
4.0	1.01
5.0	1.02
6.0	1.03
7.0	1.04
8.0	1.04
9.0	1.05
10.0	1.06
15.0	1.08
20.0	1.11
30.0	1.16
45.0	1.21
60.0	1.3



Remarks: Fully drained at 60 minutes

Soakaway test for soil infiltration rate design method based on BRE Digest 365

Permeability Test on Strata

Trial Pit Depth	1.500 m	$V_{p75-25} =$	0.292 m ³
Trial Pit Length	2.700 m	$a_{p50} =$	2.808 m ²
Trial Pit Width	0.600 m	$t_{p75-25} =$	36.000 minutes
Effective Depth	0.360 m		
Outflow Time	36 mins from 75% to 25% full		

f = 4.8077E-5 m/sec



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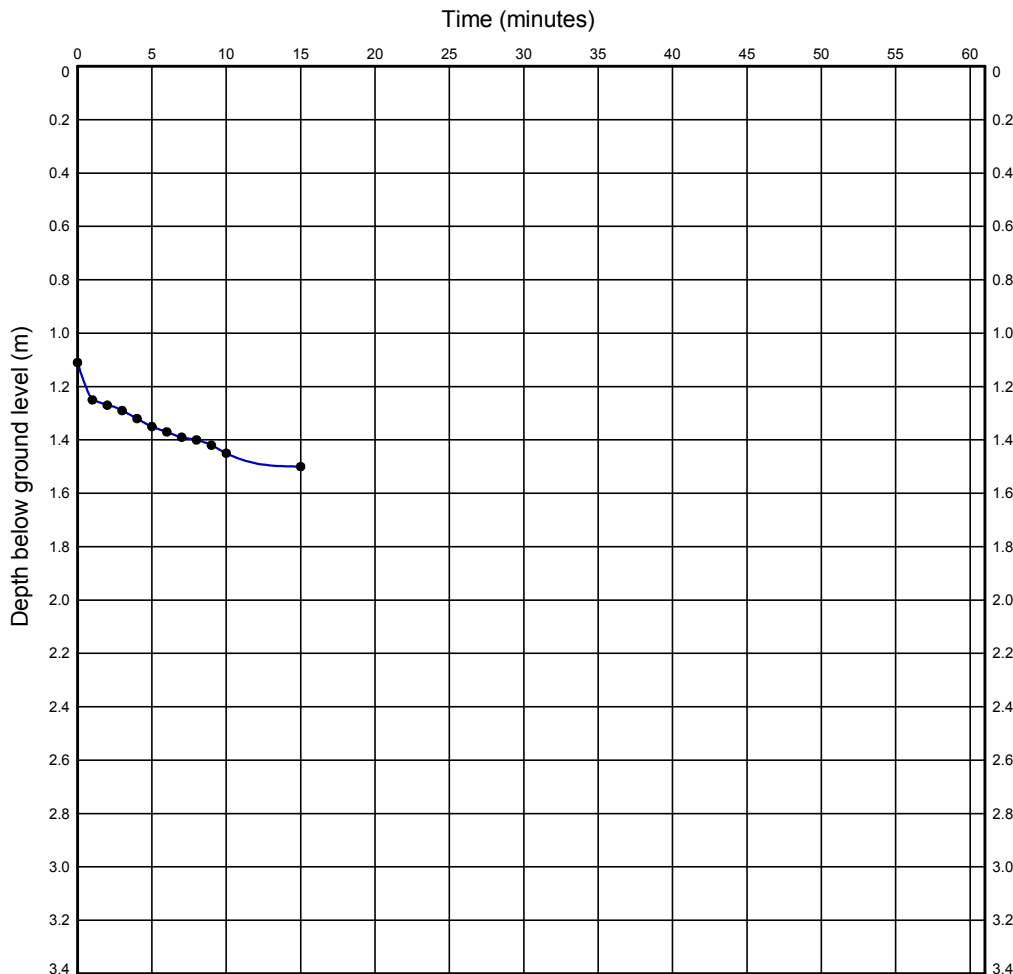
Figure No.
6

Project File: Q0281.GPJ

SOAKAWAY TEST CALCULATION SHEET

Field Observations from soakaway trial pit

Time (Minutes)	Depth of water from ground level (m)
0.0	1.11
1.0	1.25
2.0	1.27
3.0	1.29
4.0	1.32
5.0	1.35
6.0	1.37
7.0	1.39
8.0	1.4
9.0	1.42
10.0	1.45
15.0	1.5



Remarks: Fully drained at 15 minutes

Soakaway test for soil infiltration rate design method based on BRE Digest 365

Permeability Test on Strata

Trial Pit Depth	1.600 m	$V_{p75-25} =$	0.304 m^3
Trial Pit Length	2.600 m	$a_{p50} =$	2.808 m^2
Trial Pit Width	0.600 m	$t_{p75-25} =$	7.700 minutes
Effective Depth	0.390 m		
Outflow Time	7.7 mins from 75% to 25% full		

$f = 2.3449\text{E-}4 \text{ m/sec}$



Contract : Porthcawl Drainage Scheme

Point Plotted
SA07,1

Client : Bridgend County Council

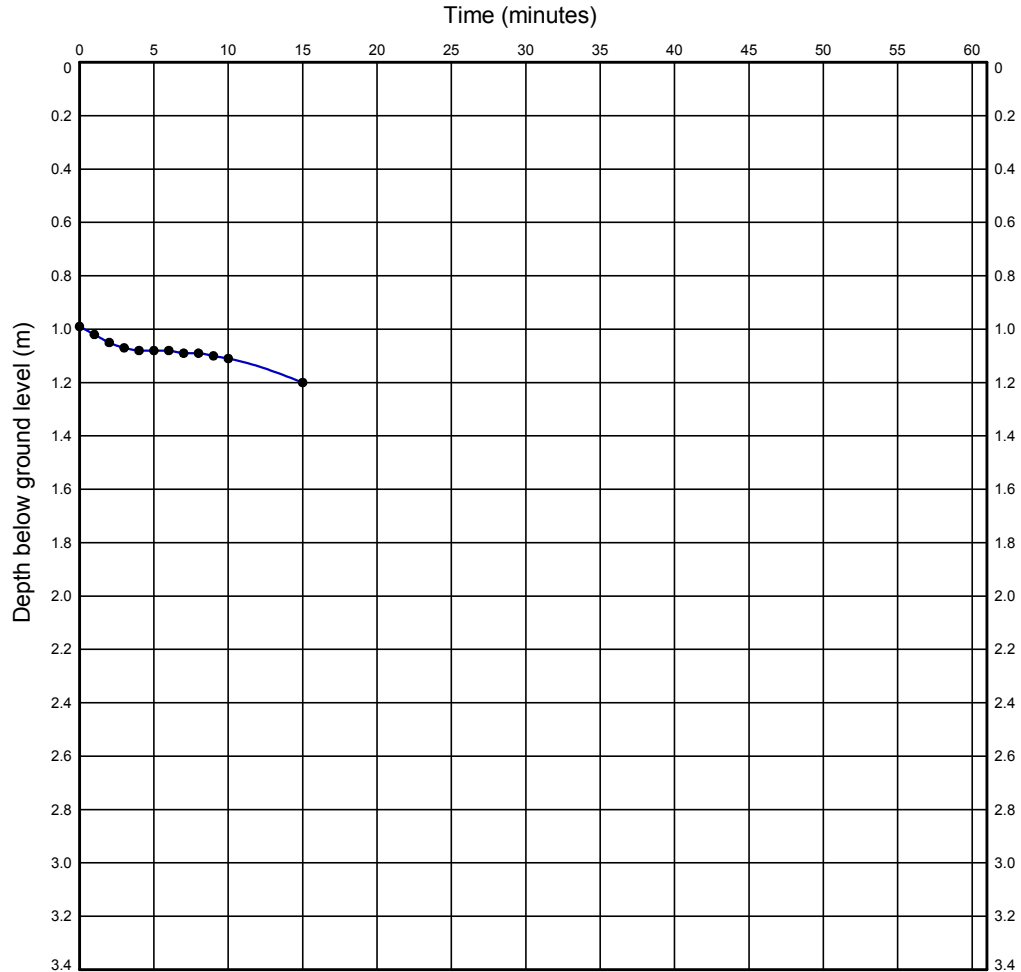
Job Number : Q0281

Engineer : Capita

SOAKAWAY TEST CALCULATION SHEET

Field Observations from soakaway trial pit

Time (Minutes)	Depth of water from ground level (m)
0.0	0.99
1.0	1.02
2.0	1.05
3.0	1.07
4.0	1.08
5.0	1.08
6.0	1.08
7.0	1.09
8.0	1.09
9.0	1.1
10.0	1.11
15.0	1.2



Remarks: Fully drained at 15 minutes

Soakaway test for soil infiltration rate
design method based on BRE Digest 365

Permeability Test on Strata

Trial Pit Depth	1.300 m	$V_{p75-25} =$	0.176 m^3
Trial Pit Length	2.800 m	$a_{p50} =$	2.394 m^2
Trial Pit Width	0.600 m	$t_{p75-25} =$	10.000 minutes
Effective Depth	0.210 m		
Outflow Time	10 mins from 75% to 25% full		

f = 1.2281E-4 m/sec



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Figure No.

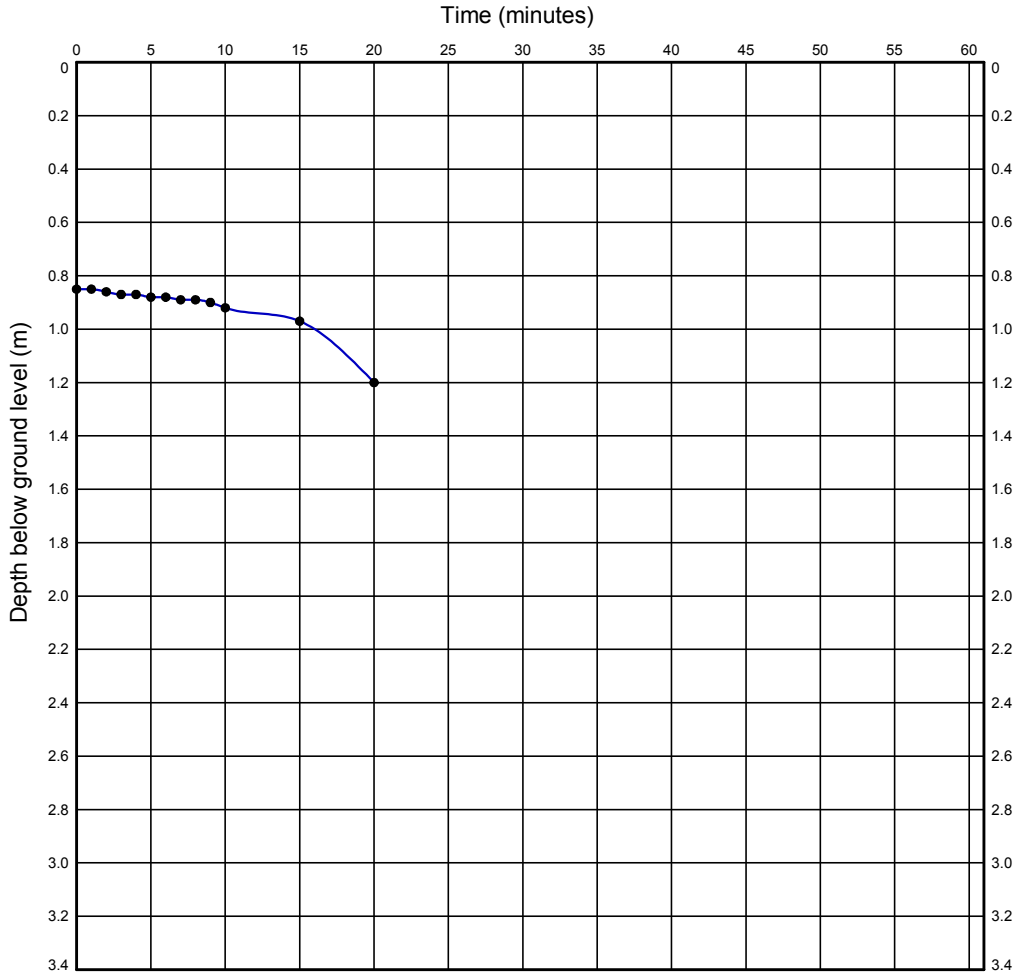
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Project File: Q0281.GPJ

SOAKAWAY TEST CALCULATION SHEET

Field Observations from soakaway trial pit

Time (Minutes)	Depth of water from ground level (m)
0.0	0.85
1.0	0.85
2.0	0.86
3.0	0.87
4.0	0.87
5.0	0.88
6.0	0.88
7.0	0.89
8.0	0.89
9.0	0.9
10.0	0.92
15.0	0.97
20.0	1.2



Remarks: Fully drained at 20 minutes

Soakaway test for soil infiltration rate
design method based on BRE Digest 365

Permeability Test on Strata

Trial Pit Depth	1.300 m	$V_{p75-25} =$	0.294 m ³
Trial Pit Length	2.800 m	$a_{p50} =$	2.870 m ²
Trial Pit Width	0.600 m	$t_{p75-25} =$	8.000 minutes
Effective Depth	0.350 m		
Outflow Time	8 mins from 75% to 25% full		

$f = 2.1341E-4$ m/sec



Contract : Porthcawl Drainage Scheme

Point Plotted
SA07,3

Client : Bridgend County Council

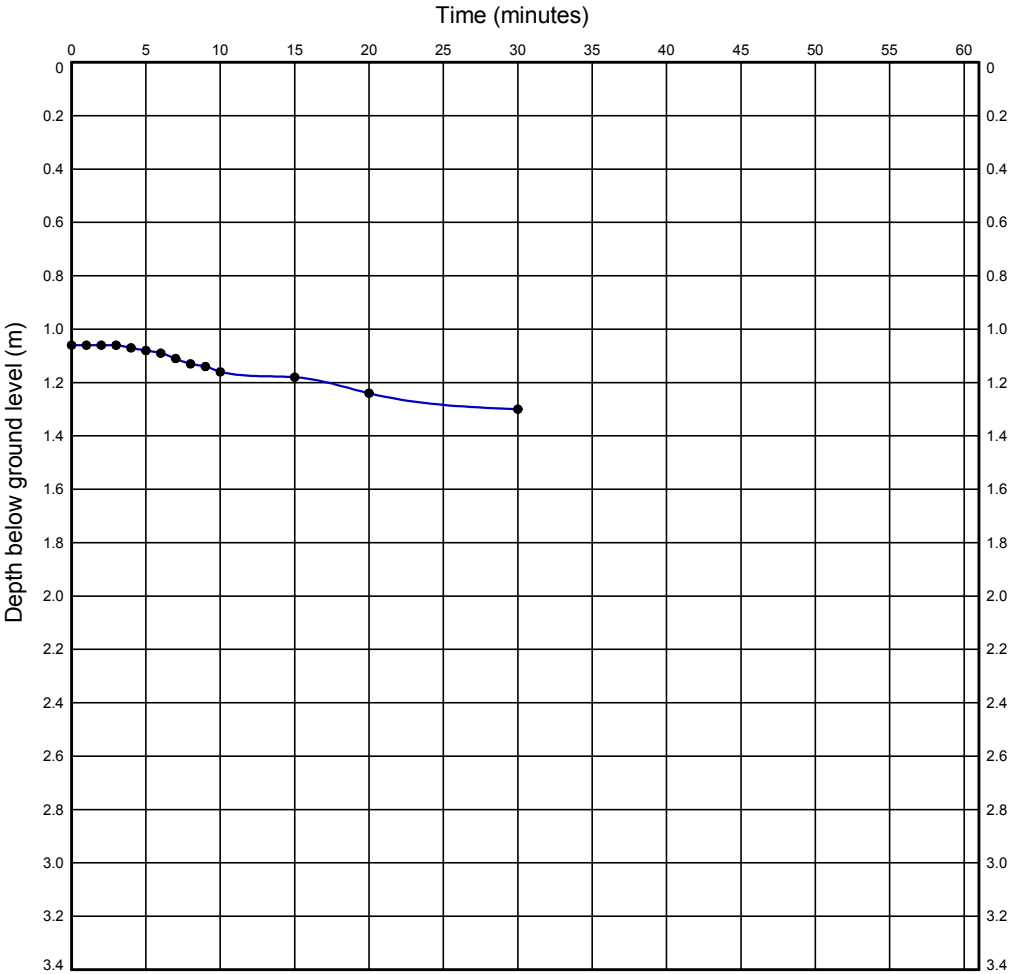
Job Number : Q0281

Engineer : Capita

SOAKAWAY TEST CALCULATION SHEET

Field Observations from soakaway trial pit

Time (Minutes)	Depth of water from ground level (m)
0.0	1.06
1.0	1.06
2.0	1.06
3.0	1.06
4.0	1.07
5.0	1.08
6.0	1.09
7.0	1.11
8.0	1.13
9.0	1.14
10.0	1.16
15.0	1.18
20.0	1.24
30.0	1.3



Remarks: Fully drained at 30 minutes

Soakaway test for soil infiltration rate design method based on BRE Digest 365

Permeability Test on Strata

Trial Pit Depth	1.300 m	$V_{p75-25} =$	0.202 m ³
Trial Pit Length	2.800 m	$a_{p50} =$	2.496 m ²
Trial Pit Width	0.600 m	$t_{p75-25} =$	12.500 minutes
Effective Depth	0.240 m		
Outflow Time	12.5 mins from 75% to 25% full		

$f = 1.0769E-4$ m/sec



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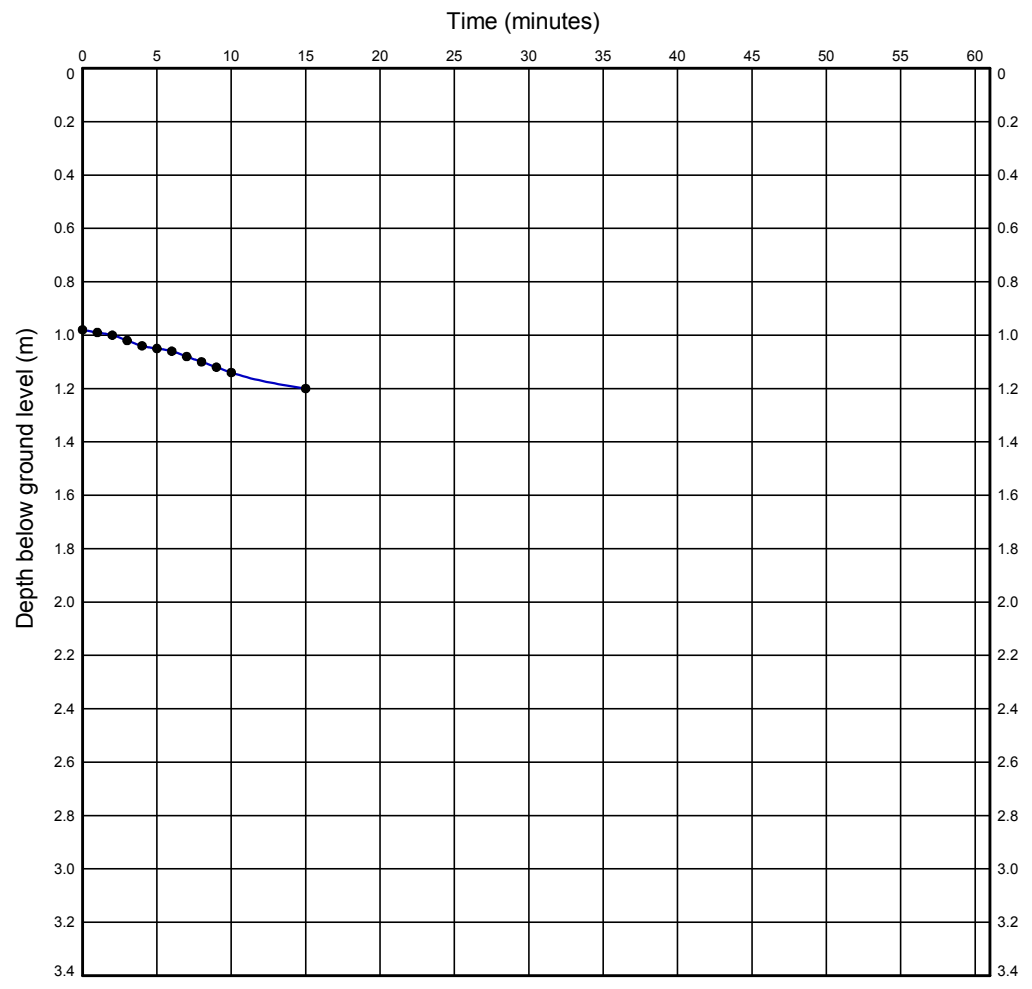
Figure No.
12

Project File: Q0281.GPJ

SOAKAWAY TEST CALCULATION SHEET

Field Observations from soakaway trial pit

Time (Minutes)	Depth of water from ground level (m)
0.0	0.98
1.0	0.99
2.0	1.00
3.0	1.02
4.0	1.04
5.0	1.05
6.0	1.06
7.0	1.08
8.0	1.10
9.0	1.12
10.0	1.14
15.0	1.20



Remarks: Fully drained at 15 minutes

Soakaway test for soil infiltration rate
design method based on BRE Digest 365

Permeability Test on Strata

Trial Pit Depth 1.200 m $V_{p75-25} = 0.178 \text{ m}^3$
Trial Pit Length 2.700 m $a_{p50} = 2.346 \text{ m}^2$
Trial Pit Width 0.600 m $t_{p75-25} = 6.000 \text{ minutes}$
Effective Depth 0.220 m
Outflow Time 6 mins from 75% to 25% full

$f = 2.1100\text{E-}4 \text{ m/sec}$



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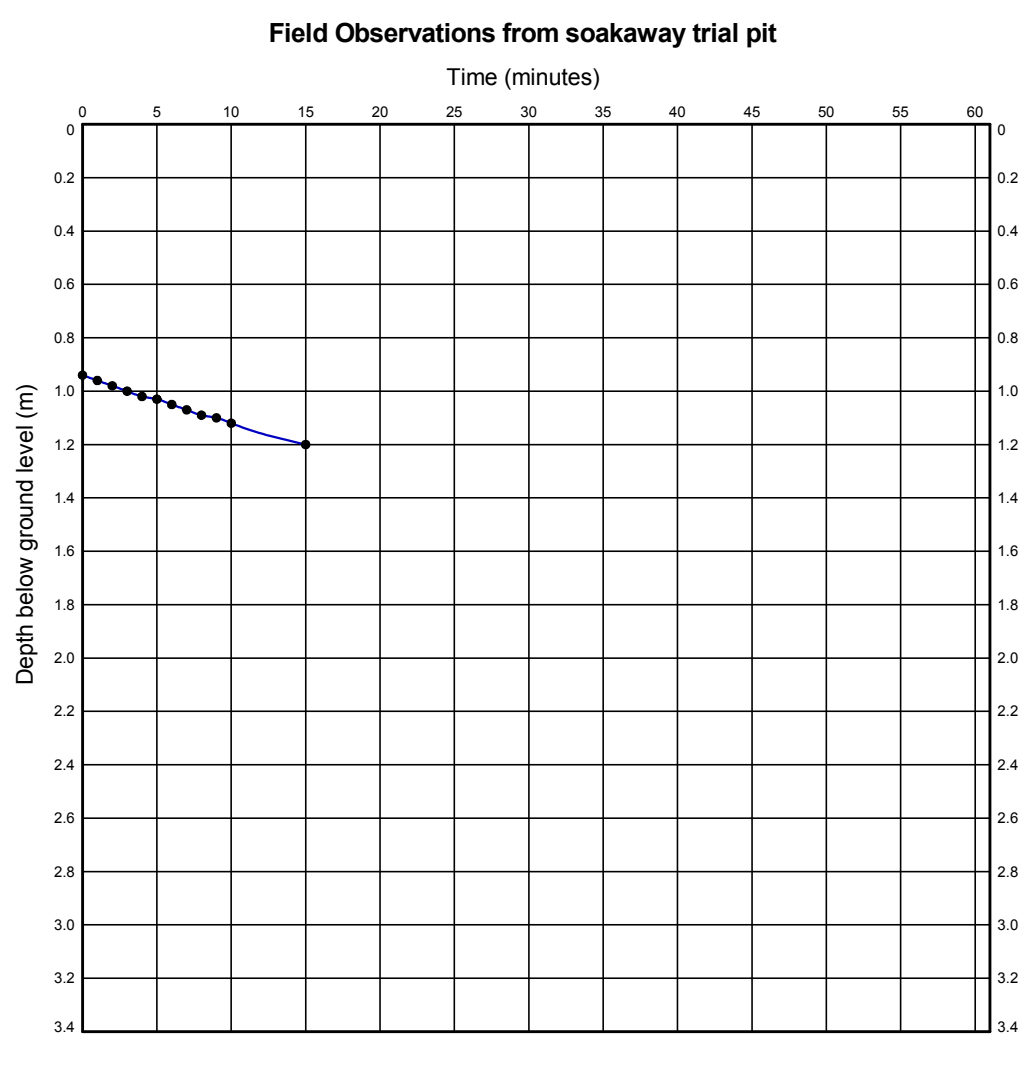
Date of Test: 18/06/2020
Project File: Q0281.GPJ

All measurements in metres unless otherwise stated

Figure No.
13

SOAKAWAY TEST CALCULATION SHEET

Time (Minutes)	Depth of water from ground level (m)
0.0	0.94
1.0	0.96
2.0	0.98
3.0	1.0
4.0	1.02
5.0	1.03
6.0	1.05
7.0	1.07
8.0	1.09
9.0	1.1
10.0	1.12
15.0	1.2



Remarks: Fully drained at 15 minutes

Soakaway test for soil infiltration rate
design method based on BRE Digest 365

Permeability Test on Strata

Trial Pit Depth	1.200 m	V _{p75-25} =	0.211 m ³
Trial Pit Length	2.700 m	a _{p50} =	2.478 m ²
Trial Pit Width	0.600 m	t _{p75-25} =	8.000 minutes
Effective Depth	0.260 m		
Outflow Time	8 mins from 75% to 25% full		

f = 1.7706E-4 m/sec



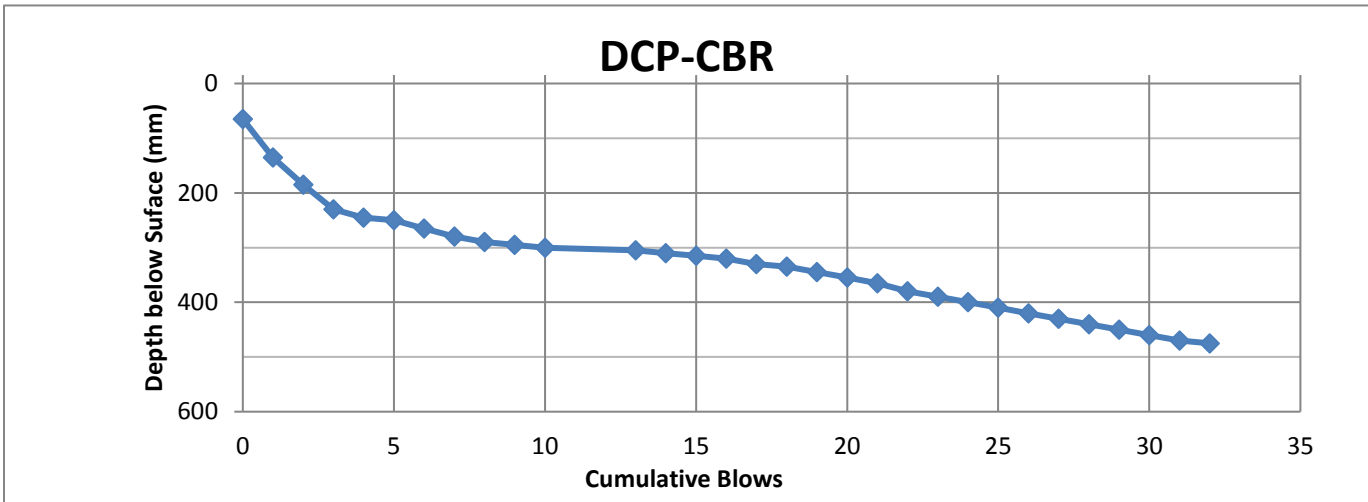
Library File: C:\USERS\PUBLIC\DOCUMENTS\BENTLEY\GINT\LIBRARIES\QUANTUM 4.GLB. Form Name: SOAKAWAY. Version 1.01.000, 13/02/09

APPENDIX IV – TRL DCP PROBE RESULTS

**Determination of Equivalent CBR using TRL Dynamic Cone Penetrometer DCP
 CBR Relationship based on Kleyn & Van Heerden (60° Cone) - TRL, DMRB HD 29/08 & TP 12**

Client Name:	Redstart		
Client Address:	St David's House, Pascal Cl, St. Mellons, Cardiff CF3 0LW		
Contract Name:	Porthcawl Darinage Scheme	Contract No.:	Q0281

Site Reference:	1	Lab. Reference:	1	Date Tested:	19.06.20
Sample Location:	CBR01 - TP01			Date Received:	19.06.20
Material Description:	Brown silty gravelly SAND				
Supplier:	In-Situ	Source:	In-Situ		
Depth Start of Test (mm)	65mm b.g.l.	Tested By:	SP		



CBR Relationship - TRL Equation $\text{Log}_{10}(\text{CBR}) = 2.48 - 1.057 * \text{Log}_{10}(\text{Penetration Rate})$

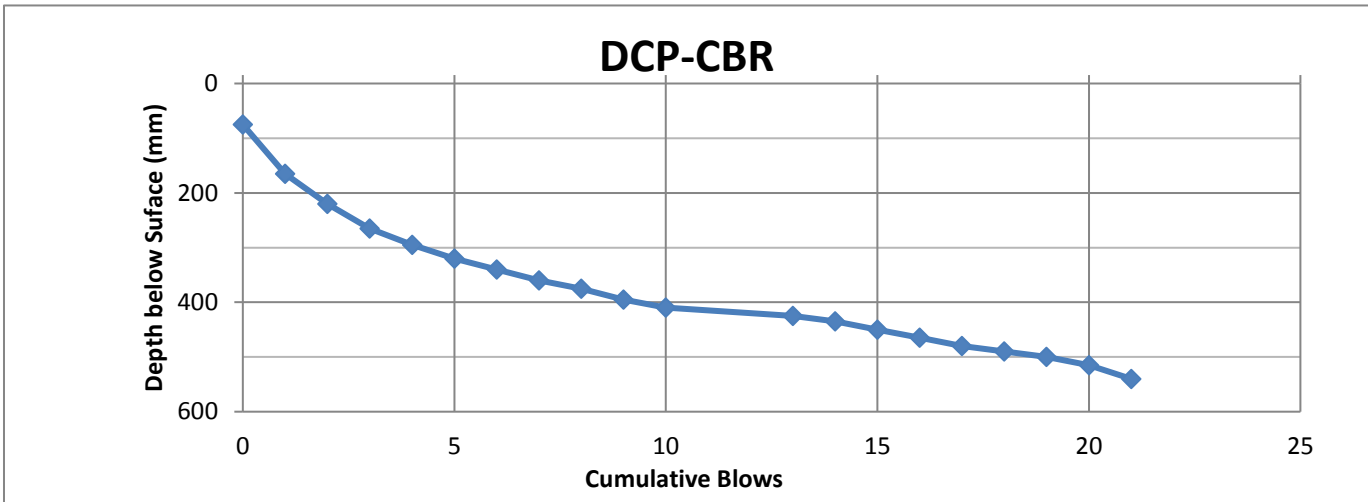
Layer No.	Number of Blows		Penetration (mm)		Rate of Penetration (mm/blow)	Equivalent CBR (%)	Remarks
	Start	Finish	Start	Finish			
1	0	39	65	475	10.51	25	Refused

Signed: **T.M.Burke**
 Position: Senior Technician
 Dated: 19.06.20

**Determination of Equivalent CBR using TRL Dynamic Cone Penetrometer DCP
 CBR Relationship based on Kleyn & Van Heerden (60° Cone) - TRL, DMRB HD 29/08 & TP 12**

Client Name:	Redstart		
Client Address:	St David's House, Pascal Cl, St. Mellons, Cardiff CF3 0LW		
Contract Name:	Porthcawl Darinage Scheme	Contract No.:	Q0281

Site Reference:	1	Lab. Reference:	1	Date Tested:	19.06.20
Sample Location:	CBR02 - TP02			Date Received:	19.06.20
Material Description:	Brown silty gravelly SAND				
Supplier:	In-Situ		Source:	In-Situ	
Depth Start of Test (mm)	75mm b.g.l.		Tested By:	SP	


 CBR Relationship - TRL Equation $\log_{10}(\text{CBR}) = 2.48 - 1.057 * \log_{10}(\text{Penetration Rate})$

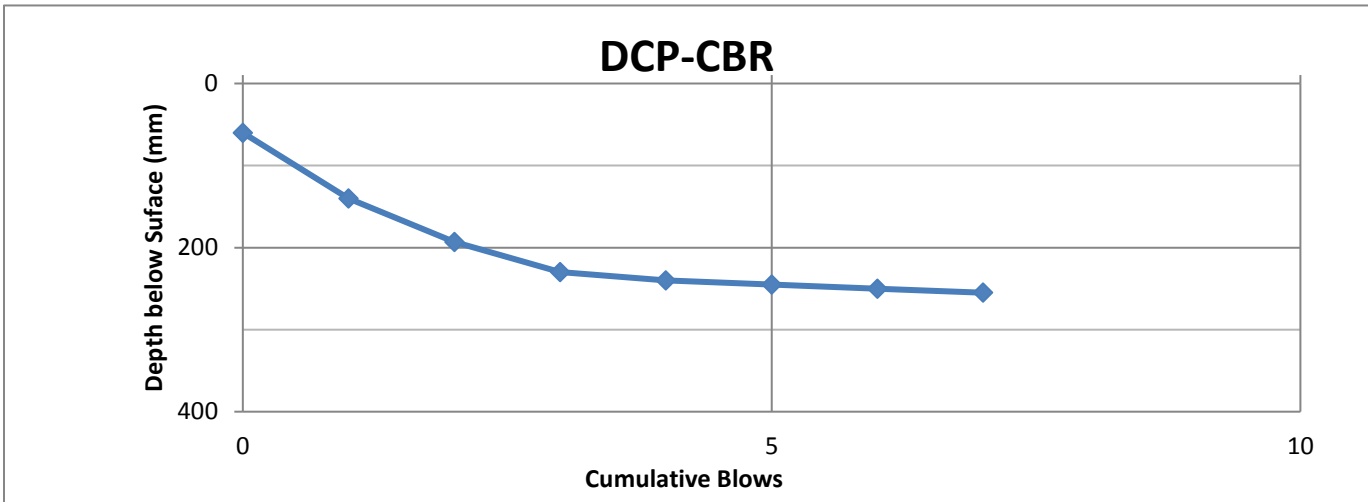
Layer No.	Number of Blows		Penetration (mm)		Rate of Penetration (mm/blow)	Equivalent CBR (%)	Remarks
	Start	Finish	Start	Finish			
1	0	28	75	540	16.61	15	Refused

Signed: **T.M.Burke**
 Position: Senior Technician
 Dated: 19.06.20

**Determination of Equivalent CBR using TRL Dynamic Cone Penetrometer DCP
 CBR Relationship based on Kleyn & Van Heerden (60° Cone) - TRL, DMRB HD 29/08 & TP 12**

Client Name:	Redstart		
Client Address:	St David's House, Pascal Cl, St. Mellons, Cardiff CF3 0LW		
Contract Name:	Porthcawl Darinage Scheme	Contract No.:	Q0281

Site Reference:	1	Lab. Reference:	1	Date Tested:	19.06.20
Sample Location:	CBR03 - TP03			Date Received:	19.06.20
Material Description:	Brown silty gravelly SAND				
Supplier:	In-Situ	Source:	In-Situ		
Depth Start of Test (mm)	60mm b.g.l.	Tested By:	SP		



CBR Relationship - TRL Equation $\log_{10}(\text{CBR}) = 2.48 - 1.057 * \log_{10}(\text{Penetration Rate})$

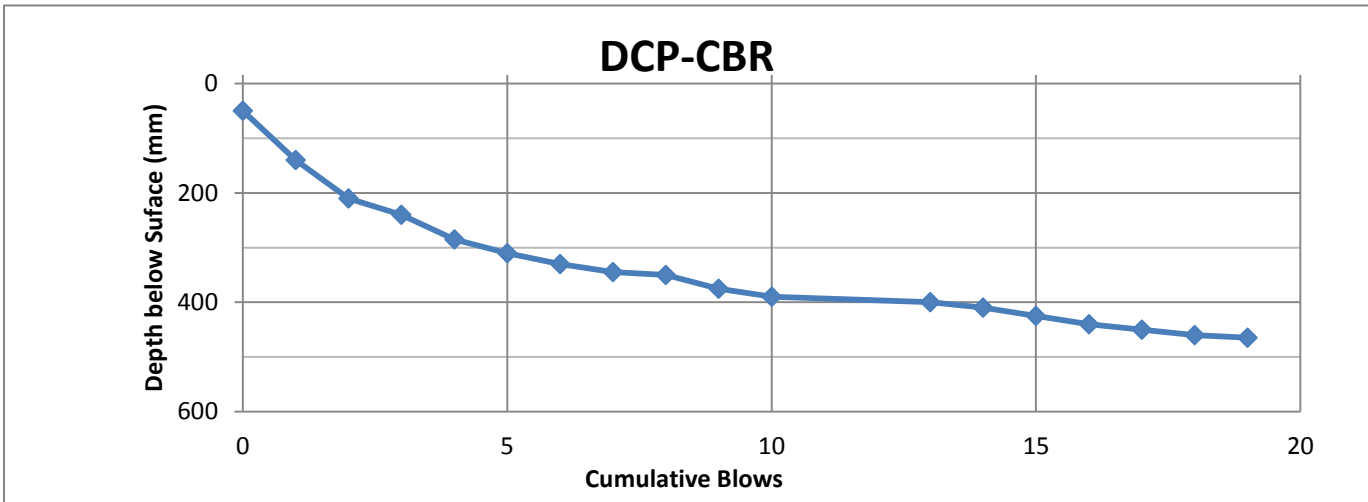
Layer No.	Number of Blows		Penetration (mm)		Rate of Penetration (mm/blow)	Equivalent CBR (%)	Remarks
	Start	Finish	Start	Finish			
1	0	16	60	255	12.19	21	Refused

Signed: **T.M.Burke**
 Position: Senior Technician
 Dated: 19.06.20

**Determination of Equivalent CBR using TRL Dynamic Cone Penetrometer DCP
 CBR Relationship based on Kleyn & Van Heerden (60° Cone) - TRL, DMRB HD 29/08 & TP 12**

Client Name:	Redstart		
Client Address:	St David's House, Pascal Cl, St. Mellons, Cardiff CF3 0LW		
Contract Name:	Porthcawl Darinage Scheme	Contract No.:	Q0281

Site Reference:	1	Lab. Reference:	1	Date Tested:	19.06.20
Sample Location:	CBR04 - TP04			Date Received:	19.06.20
Material Description:	Brown silty gravelly SAND				
Supplier:	In-Situ	Source:	In-Situ		
Depth Start of Test (mm)	50mm b.g.l.	Tested By:	SP		



CBR Relationship - TRL Equation $\text{Log}_{10}(\text{CBR}) = 2.48 - 1.057 * \text{Log}_{10}(\text{Penetration Rate})$

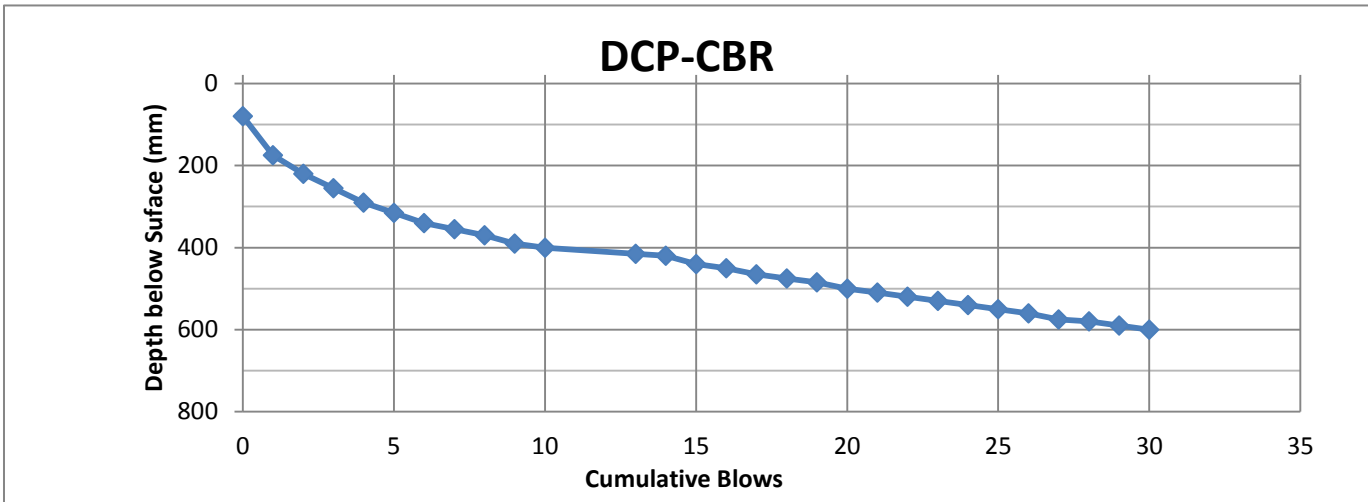
Layer No.	Number of Blows		Penetration (mm)		Rate of Penetration (mm/blow)	Equivalent CBR (%)	Remarks
	Start	Finish	Start	Finish			
1	0	26	50	465	15.96	16	Refused

Signed: **T.M.Burke**
 Position: Senior Technician
 Dated: 19.06.20

**Determination of Equivalent CBR using TRL Dynamic Cone Penetrometer DCP
 CBR Relationship based on Kleyn & Van Heerden (60° Cone) - TRL, DMRB HD 29/08 & TP 12**

Client Name:	Redstart		
Client Address:	St David's House, Pascal Cl, St. Mellons, Cardiff CF3 0LW		
Contract Name:	Porthcawl Darinage Scheme	Contract No.:	Q0281

Site Reference:	1	Lab. Reference:	1	Date Tested:	19.06.20
Sample Location:	CBR05 - TP05			Date Received:	19.06.20
Material Description:	Brown silty gravelly SAND				
Supplier:	In-Situ		Source:	In-Situ	
Depth Start of Test (mm)	80mm b.g.l.		Tested By:	SP	



CBR Relationship - TRL Equation $\text{Log}_{10}(\text{CBR}) = 2.48 - 1.057 * \text{Log}_{10}(\text{Penetration Rate})$

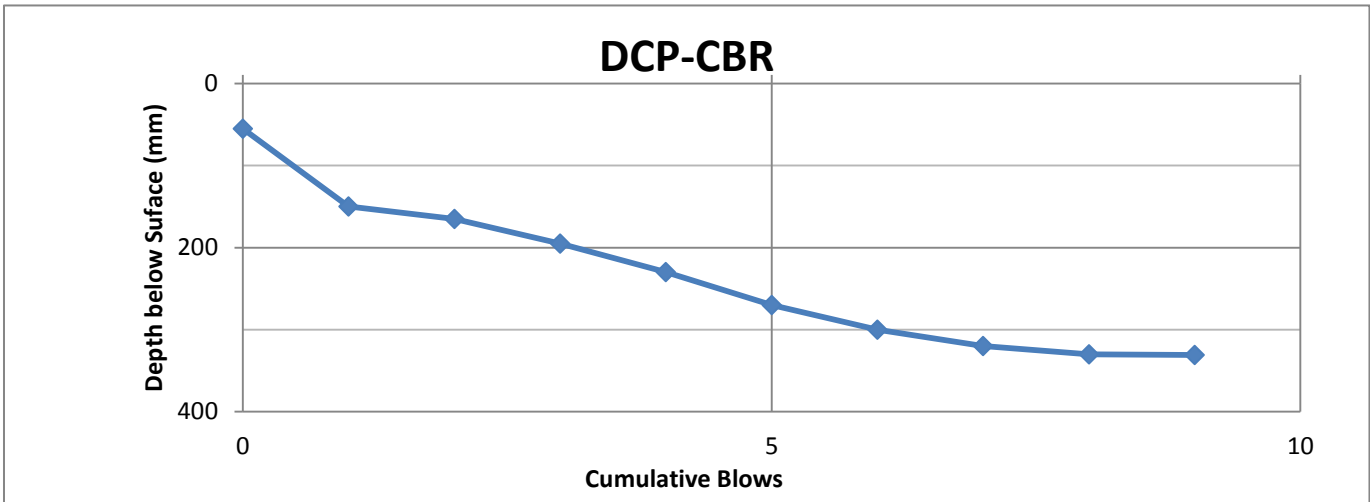
Layer No.	Number of Blows		Penetration (mm)		Rate of Penetration (mm/blow)	Equivalent CBR (%)	Remarks
	Start	Finish	Start	Finish			
1	0	37	80	600	14.05	18	Refused

Signed: **T.M.Burke**
 Position: Senior Technician
 Dated: 19.06.20

**Determination of Equivalent CBR using TRL Dynamic Cone Penetrometer DCP
 CBR Relationship based on Kleyn & Van Heerden (60° Cone) - TRL, DMRB HD 29/08 & TP 12**

Client Name:	Redstart		
Client Address:	St David's House, Pascal Cl, St. Mellons, Cardiff CF3 0LW		
Contract Name:	Porthcawl Darinage Scheme	Contract No.:	Q0281

Site Reference:	1	Lab. Reference:	1	Date Tested:	19.06.20
Sample Location:	CBR06 - TP06			Date Received:	19.06.20
Material Description:	Brown silty gravelly SAND				
Supplier:	In-Situ		Source:	In-Situ	
Depth Start of Test (mm)	55mm b.g.l.		Tested By:	SP	



CBR Relationship - TRL Equation $\log_{10}(\text{CBR}) = 2.48 - 1.057 * \log_{10}(\text{Penetration Rate})$

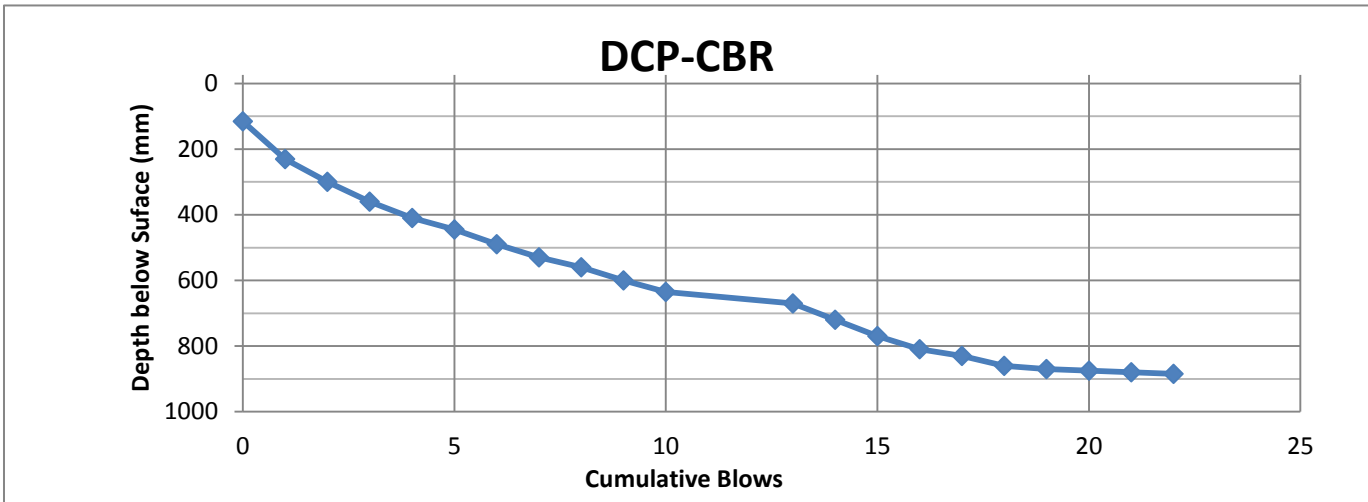
Layer No.	Number of Blows		Penetration (mm)		Rate of Penetration (mm/blow)	Equivalent CBR (%)	Remarks
	Start	Finish	Start	Finish			
1	0	18	55	331	15.33	17	Refused

Signed: **T.M.Burke**
 Position: Senior Technician
 Dated: 19.06.20

**Determination of Equivalent CBR using TRL Dynamic Cone Penetrometer DCP
 CBR Relationship based on Kleyn & Van Heerden (60° Cone) - TRL, DMRB HD 29/08 & TP 12**

Client Name:	Redstart		
Client Address:	St David's House, Pascal Cl, St. Mellons, Cardiff CF3 0LW		
Contract Name:	Porthcawl Darinage Scheme	Contract No.:	Q0281

Site Reference:	1	Lab. Reference:	1	Date Tested:	19.06.20
Sample Location:	CBR07 - TP07			Date Received:	19.06.20
Material Description:	Brown silty gravelly SAND				
Supplier:	In-Situ		Source:	In-Situ	
Depth Start of Test (mm)	115mm b.g.l.		Tested By:	SP	


 CBR Relationship - TRL Equation $\text{Log}_{10}(\text{CBR}) = 2.48 - 1.057 * \text{Log}_{10}(\text{Penetration Rate})$

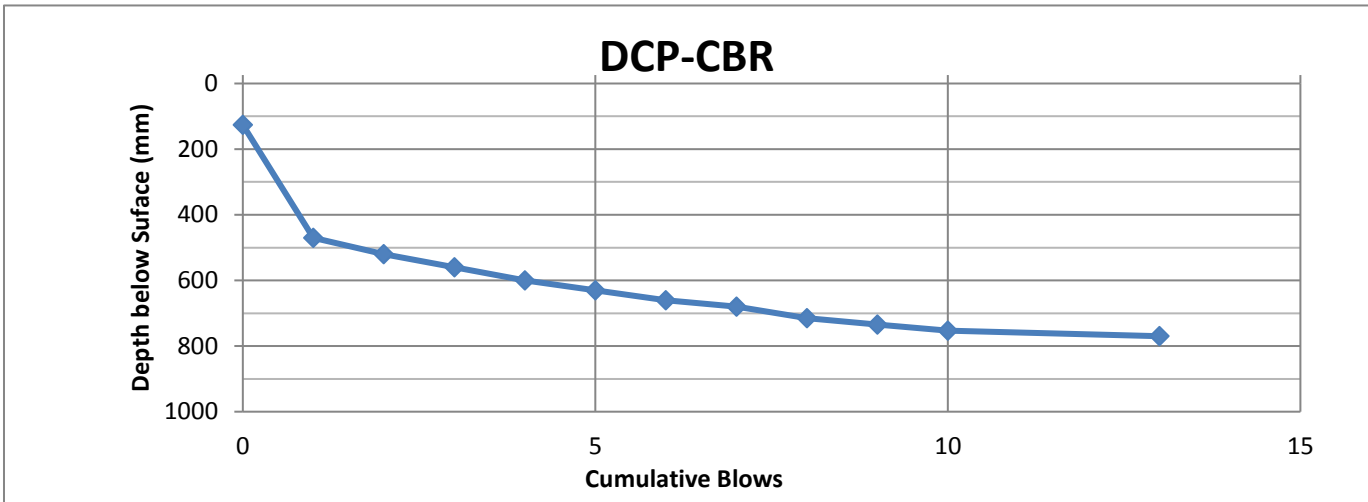
Layer No.	Number of Blows		Penetration (mm)		Rate of Penetration (mm/blow)	Equivalent CBR (%)	Remarks
	Start	Finish	Start	Finish			
1	0	29	115	885	26.55	9	Refused

Signed: **T.M.Burke**
 Position: Senior Technician
 Dated: 19.06.20

**Determination of Equivalent CBR using TRL Dynamic Cone Penetrometer DCP
 CBR Relationship based on Kleyn & Van Heerden (60° Cone) - TRL, DMRB HD 29/08 & TP 12**

Client Name:	Redstart		
Client Address:	St David's House, Pascal Cl, St. Mellons, Cardiff CF3 0LW		
Contract Name:	Porthcawl Darinage Scheme	Contract No.:	Q0281

Site Reference:	1	Lab. Reference:	1	Date Tested:	19.06.20
Sample Location:	CBR08 - TP08			Date Received:	19.06.20
Material Description:	Brown silty gravelly SAND				
Supplier:	In-Situ	Source:	In-Situ		
Depth Start of Test (mm)	126mm b.g.l.	Tested By:	SP		



CBR Relationship - TRL Equation $\log_{10}(\text{CBR}) = 2.48 - 1.057 * \log_{10}(\text{Penetration Rate})$

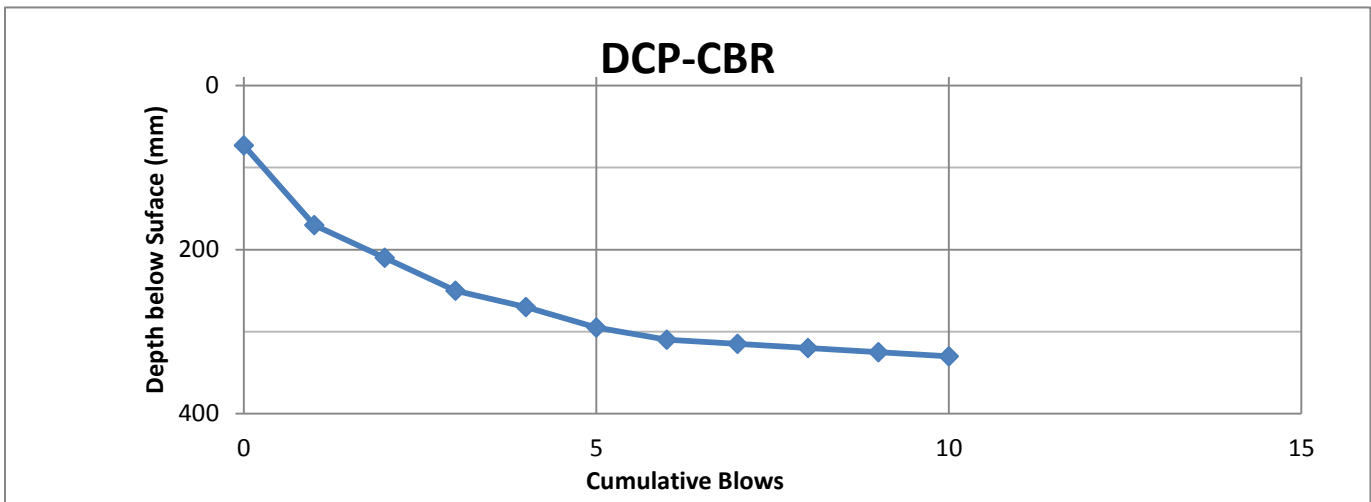
Layer No.	Number of Blows		Penetration (mm)		Rate of Penetration (mm/blow)	Equivalent CBR (%)	Remarks
	Start	Finish	Start	Finish			
1	0	20	126	770	32.20	8	Refused

Signed: **T.M.Burke**
 Position: Senior Technician
 Dated: 19.06.20

**Determination of Equivalent CBR using TRL Dynamic Cone Penetrometer DCP
 CBR Relationship based on Kleyn & Van Heerden (60° Cone) - TRL, DMRB HD 29/08 & TP 12**

Client Name:	Redstart		
Client Address:	St David's House, Pascal Cl, St. Mellons, Cardiff CF3 0LW		
Contract Name:	Porthcawl Darinage Scheme	Contract No.:	Q0281

Site Reference:	1	Lab. Reference:	1	Date Tested:	19.06.20
Sample Location:	CBR09 - TP09			Date Received:	19.06.20
Material Description:	Brown silty gravelly SAND				
Supplier:	In-Situ	Source:	In-Situ		
Depth Start of Test (mm)	73mm b.g.l.	Tested By:	SP		



CBR Relationship - TRL Equation $\log_{10}(\text{CBR}) = 2.48 - 1.057 * \log_{10}(\text{Penetration Rate})$

Layer No.	Number of Blows		Penetration (mm)		Rate of Penetration (mm/blow)	Equivalent CBR (%)	Remarks
	Start	Finish	Start	Finish			
1	0	21	73	330	12.24	21	Refused

Signed: **T.M.Burke**
 Position: Senior Technician
 Dated: 19.06.20

APPENDIX V – GEOTECHNICAL LABORATORY TEST RESULTS



2788

Laboratory Report



GEO Site & Testing Services Ltd

Contract Number: 49141

Client Ref: **Q0281**

Report Date: **23-07-2020**

Client PO:

Client **Quantum Geotechnic Ltd**
Ty Berwig
Bynea
Llanelli.
Carmarthenshire.
SA14 9ST

Contract Title: **Porthcawl Drainage Scheme**
For the attention of: **Steffan Picton**

Date Received: **03-07-2020**

Date Completed: **23-07-2020**

Test Description	Qty
Moisture Content BS 1377:1990 - Part 2 : 3.2 - * UKAS	5
4 Point Liquid & Plastic Limit BS 1377:1990 - Part 2 : 4.3 & 5.3 - * UKAS	5
PSD Wet Sieve method BS 1377:1990 - Part 2 : 9.2 - * UKAS	9
Disposal of samples for job	1

Notes: Observations and Interpretations are outside the UKAS Accreditation

* - denotes test included in laboratory scope of accreditation

- denotes test carried out by approved contractor

@ - denotes non accredited tests

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved Signatories:

Emma Sharp (Office Manager) - Paul Evans (Quality/Technical Manager) - Richard John (Advanced Testing Manager)

Sean Penn (Administrative/Accounts Assistant) - Shaun Jones (Laboratory manager) - Wayne Honey (Administrative/Quality Assistant)

GEO Site & Testing Services Ltd

Unit 3-4, Heol Aur, Dafen Ind Estate, Dafen, Llanelli, Carmarthenshire SA14 8QN

Tel: 01554 784040 Fax: 01554 784041 info@gstl.co.uk gstl.co.uk



**NATURAL MOISTURE, LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX
(BS 1377 : Part 2 : 1990 Method 5)**

Contract Number	49141	
Site Name	Porthcawl Drainage Scheme	
Date Tested	15/07/2020	
	DESCRIPTIONS	

Sample/Hole Reference	Sample Number	Sample Type	Depth (m)			Descriptions
TP02	2	B	1.20	-		Brown slightly clayey/silty fine to coarse gravelly fine to coarse SAND
TP04	3	B	2.00	-	3.00	Brown slightly clayey/silty fine to coarse SAND
TP05	2	B	1.00	-	2.00	Brown slightly clayey/silty fine to coarse SAND
TP06	1	B	0.50	-	1.00	Brown fine to coarse SAND
TP09	2	B	1.00	-		Brown slightly clayey/silty fine to medium SAND
				-		
				-		
				-		
				-		
				-		
				-		
				-		
				-		
				-		
				-		
				-		
				-		
				-		
				-		
				-		
				-		
				-		
				-		
				-		

Operators	Checked	23/07/2020	Wayne Honey (Administrative/Quality Assistant)
Luke Williams	Approved	23/07/2020	Paul Evans (Quality/Technical Manager)



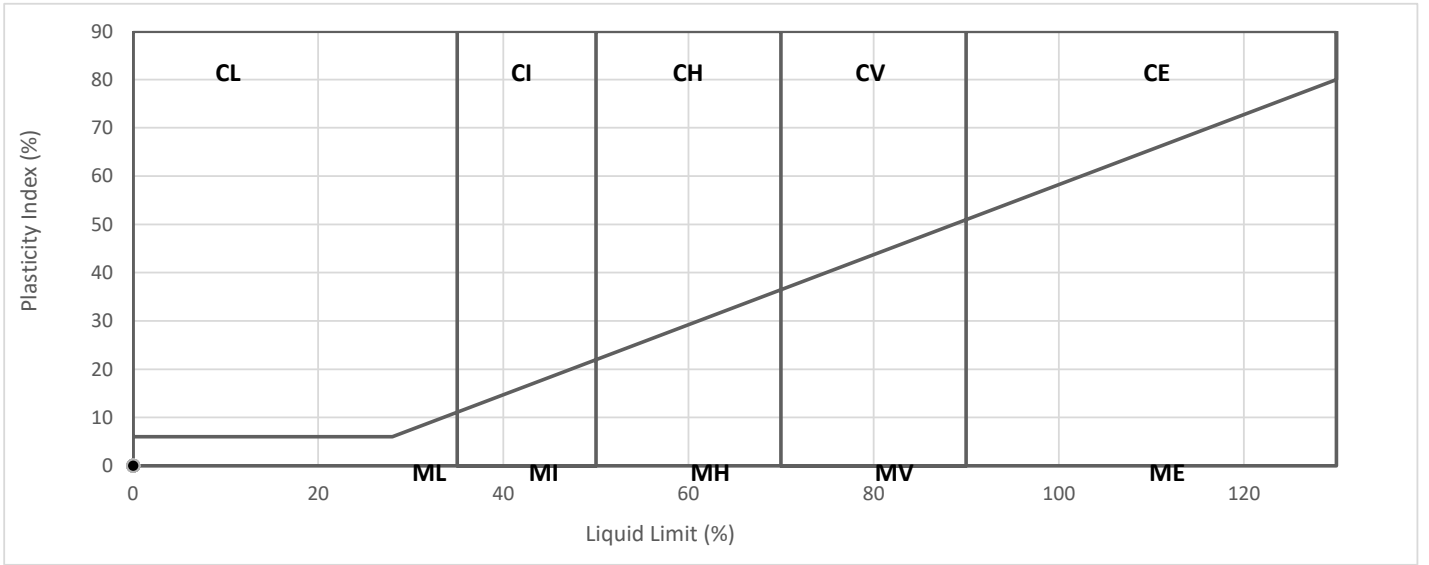


**NATURAL MOISTURE, LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX
(BS 1377 : Part 2 : 1990 Method 5)**

Contract Number	49141
Project Location	Porthcawl Drainage Scheme
Date Tested	15/07/2020

Sample/Hole Reference	Sample Number	Sample Type	Depth (m)			Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity index %	Passing 0.425mm %	Remarks
TP02	2	B	1.20	-		9.0		NP		73	
TP04	3	B	2.00	-	3.00	3.0		NP		99	
TP05	2	B	1.00	-	2.00	4.0		NP		99	
TP06	1	B	0.50	-	1.00	3.0		NP		99	
TP09	2	B	1.00	-		3.6		NP		99	
				-							
				-							
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				-							
				-							
				-							

Symbols: NP : Non Plastic # : Liquid Limit and Plastic Limit Wet Sieved
**PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION
 BS 5930:1999+A2:2010**



Operators	Checked	23/07/2020	Wayne Honey (Administrative/Quality Assistant)
Luke Williams	Approved	23/07/2020	Paul Evans (Quality/Technical Manager)





**PARTICLE SIZE DISTRIBUTION
BS 1377 Part 2:1990
Wet Sieve, Clause 9.2**

Contract Number **49141**

Borehole/Pit No. **TP01**

Site Name **Porthcawl Drainage Scheme**

Sample No. **2**

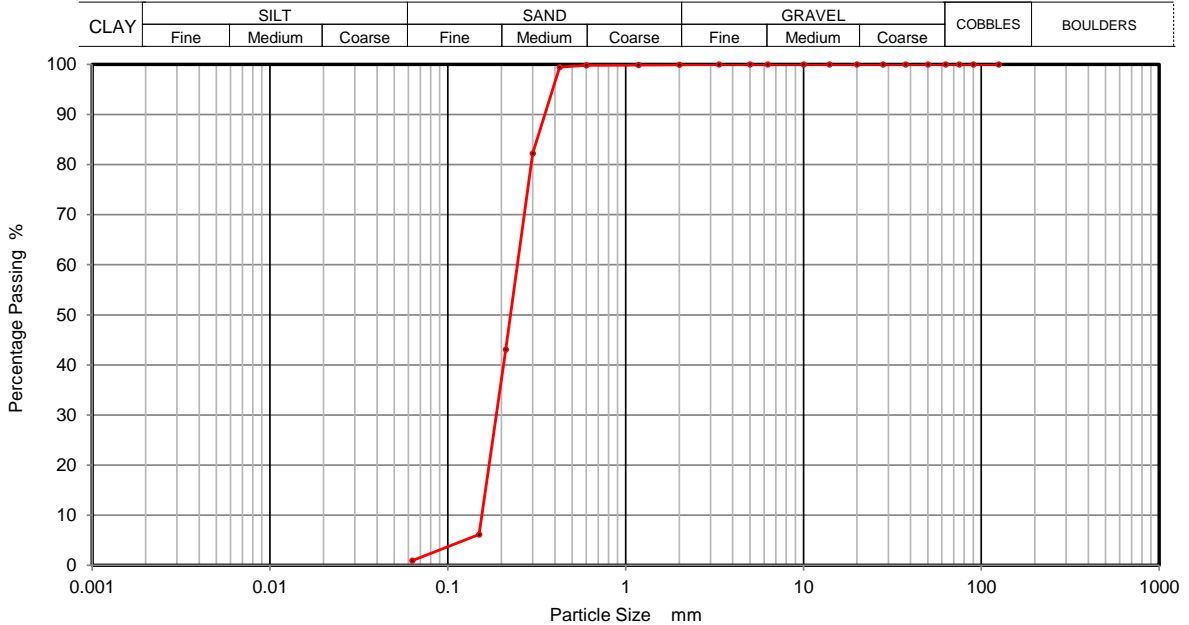
Soil Description **Brown slightly clayey/silty fine to medium GRAVEL**

Depth Top **2.00**

Depth Base

Date Tested **20/07/2020**

Sample Type **B**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	99		
0.3	82		
0.212	43		
0.15	6		
0.063	1		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	99
Silt and Clay	1

Remarks
Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	22/07/2020	Wayne Honey	<i>W. Honey</i>
RO/MH	Approved	23/07/2020	Paul Evans	<i>P. Evans</i>





**PARTICLE SIZE DISTRIBUTION
BS 1377 Part 2:1990
Wet Sieve, Clause 9.2**

Contract Number **49141**

Borehole/Pit No. **TP02**

Site Name **Porthcawl Drainage Scheme**

Sample No. **2**

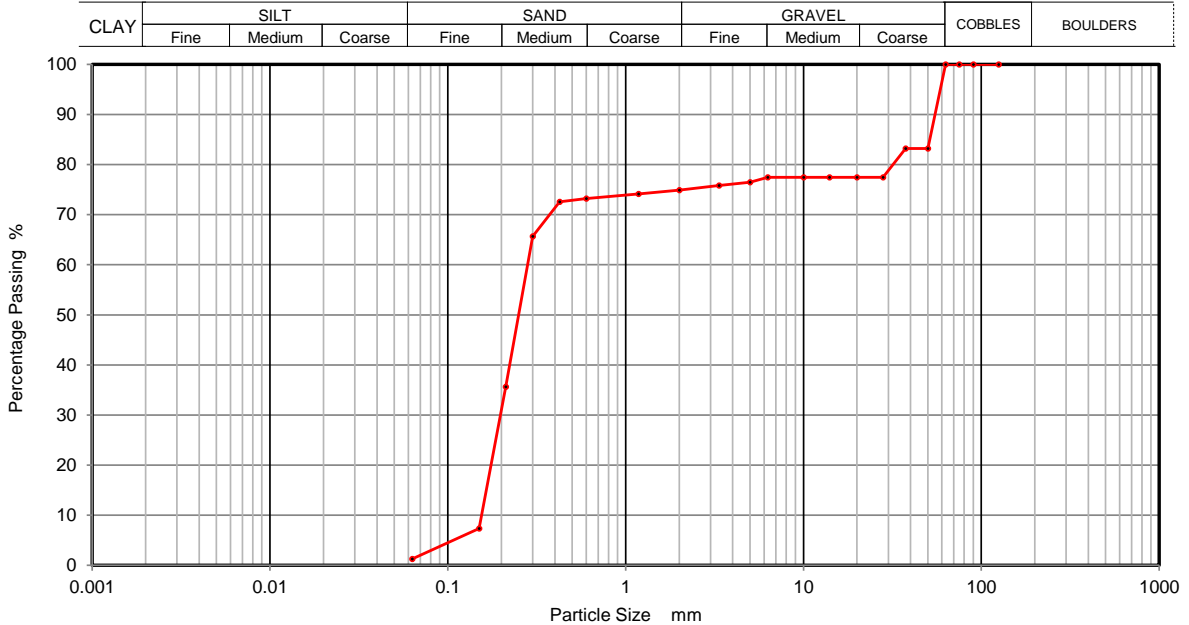
Soil Description **Brown slightly clayey/silty fine to coarse gravelly fine to coarse SAND**

Depth Top **1.20**

Depth Base

Date Tested **20/07/2020**

Sample Type **B**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	83		
37.5	83		
28	77		
20	77		
14	77		
10	77		
6.3	77		
5	76		
3.35	76		
2	75		
1.18	74		
0.6	73		
0.425	73		
0.3	66		
0.212	36		
0.15	7		
0.063	1		

Sample Proportions	% dry mass
Cobbles	0
Gravel	25
Sand	74
Silt and Clay	1

Remarks
Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	22/07/2020	Wayne Honey	<i>W. Honey</i>
RO/MH	Approved	23/07/2020	Paul Evans	<i>P. Evans</i>





**PARTICLE SIZE DISTRIBUTION
BS 1377 Part 2:1990
Wet Sieve, Clause 9.2**

Contract Number **49141**

Borehole/Pit No. **TP03**

Site Name **Porthcawl Drainage Scheme**

Sample No. **2**

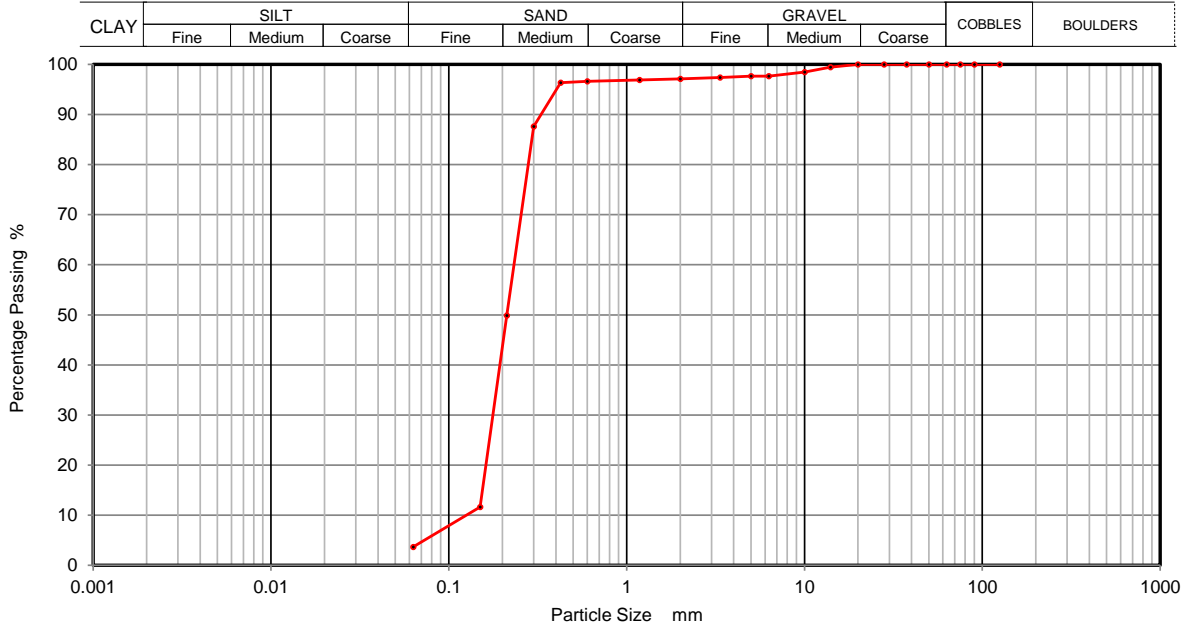
Soil Description **Brown slightly fine to medium gravelly slightly clayey/silty fine to coarse SAND**

Depth Top **1.00**

Depth Base

Date Tested **20/07/2020**

Sample Type **B**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	99		
10	98		
6.3	98		
5	98		
3.35	97		
2	97		
1.18	97		
0.6	97		
0.425	96		
0.3	88		
0.212	50		
0.15	12		
0.063	4		

Sample Proportions	% dry mass
Cobbles	0
Gravel	3
Sand	93
Silt and Clay	4

Remarks
Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	22/07/2020	Wayne Honey	<i>W. Honey</i>
RO/MH	Approved	23/07/2020	Paul Evans	<i>P. Evans</i>





**PARTICLE SIZE DISTRIBUTION
BS 1377 Part 2:1990
Wet Sieve, Clause 9.2**

Contract Number **49141**

Borehole/Pit No. **TP04**

Site Name **Porthcawl Drainage Scheme**

Sample No. **3**

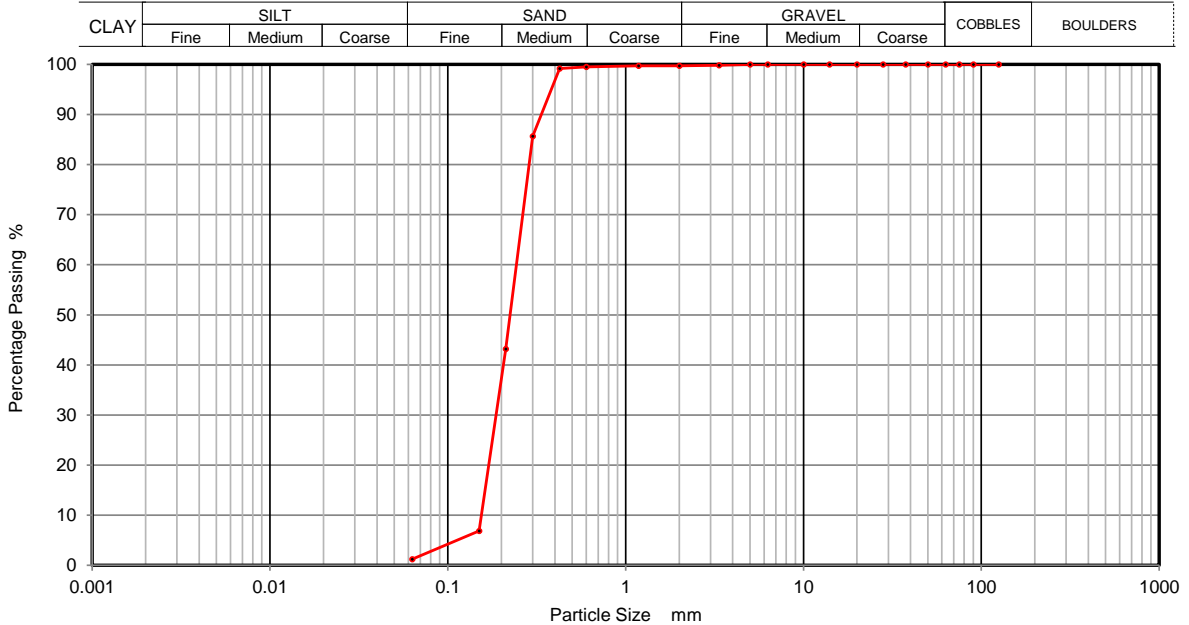
Soil Description **Brown slightly clayey/silty fine to coarse SAND**

Depth Top **2.00**

Depth Base **3.00**

Date Tested **20/07/2020**

Sample Type **B**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	99		
0.3	86		
0.212	43		
0.15	7		
0.063	1		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	99
Silt and Clay	1

Remarks
Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	22/07/2020	Wayne Honey	<i>W. Honey</i>
RO/MH	Approved	23/07/2020	Paul Evans	<i>P. Evans</i>





**PARTICLE SIZE DISTRIBUTION
BS 1377 Part 2:1990
Wet Sieve, Clause 9.2**

Contract Number **49141**

Borehole/Pit No. **TP05**

Site Name **Porthcawl Drainage Scheme**

Sample No. **2**

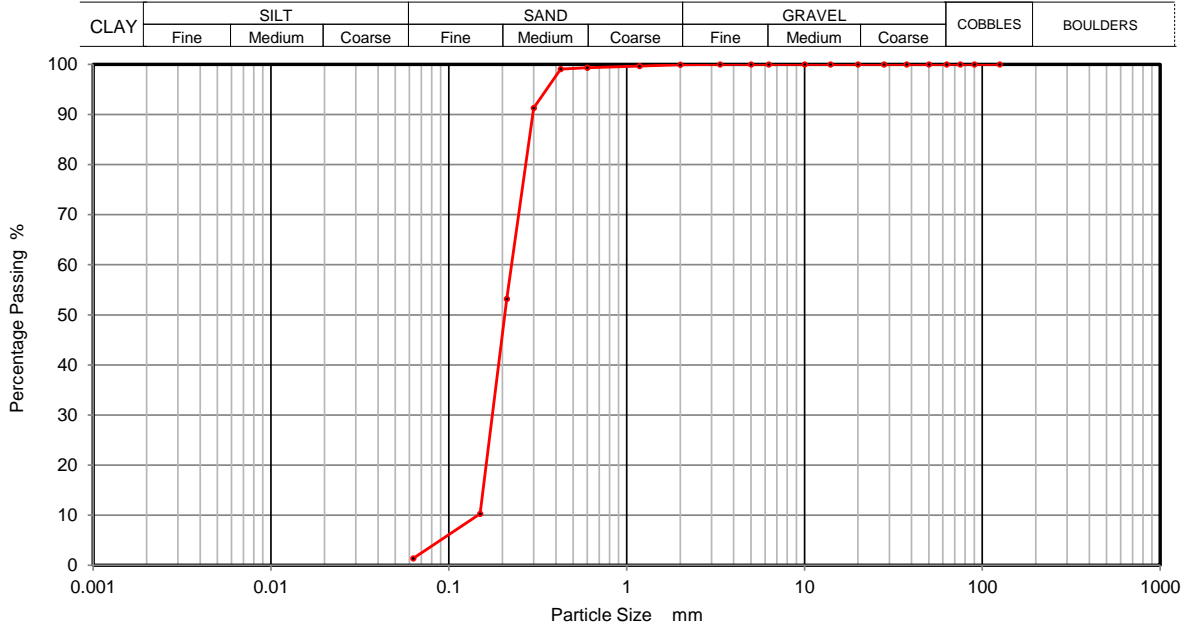
Soil Description **Brown slightly clayey/silty fine to coarse SAND**

Depth Top **1.00**

Depth Base **2.00**

Date Tested **21/07/2020**

Sample Type **B**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	99		
0.3	91		
0.212	53		
0.15	10		
0.063	1		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	99
Silt and Clay	1

Remarks
Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	22/07/2020	Wayne Honey	<i>W. Honey</i>
RO/MH	Approved	23/07/2020	Paul Evans	<i>P. Evans</i>





**PARTICLE SIZE DISTRIBUTION
BS 1377 Part 2:1990
Wet Sieve, Clause 9.2**

Contract Number **49141**

Borehole/Pit No. **TP06**

Site Name **Porthcawl Drainage Scheme**

Sample No. **1**

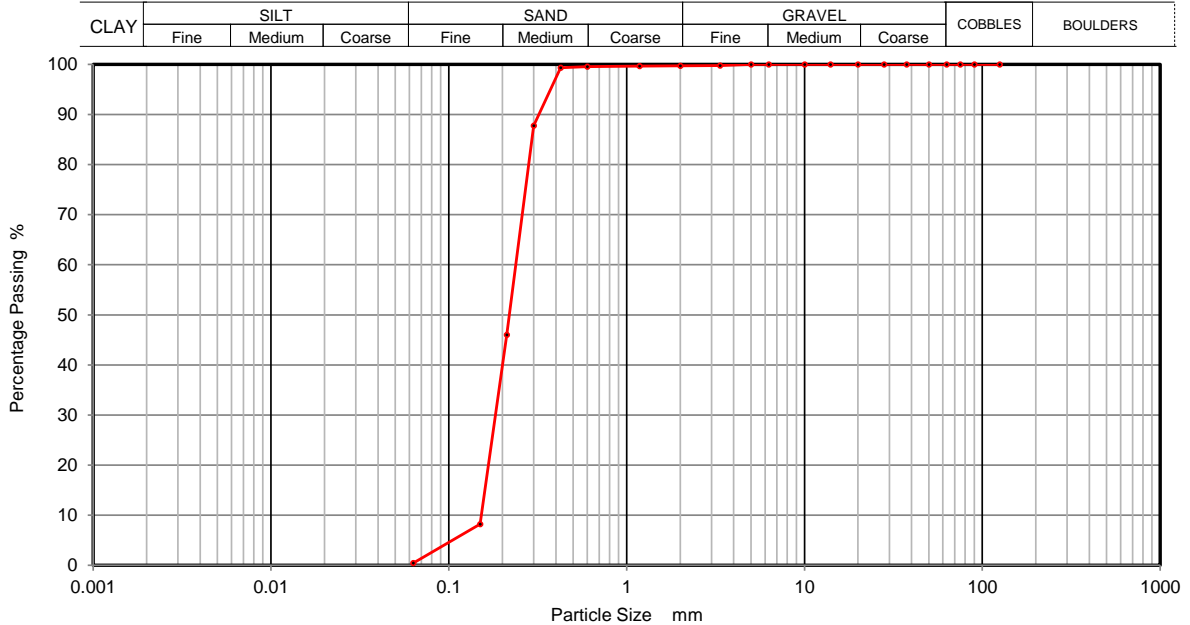
Soil Description **Brown fine to coarse SAND**

Depth Top **0.50**

Depth Base **1.00**

Date Tested **20/07/2020**

Sample Type **B**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	99		
0.3	88		
0.212	46		
0.15	8		
0.063	0		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	100
Silt and Clay	0

Remarks
Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	22/07/2020	Wayne Honey	<i>W. Honey</i>
RO/MH	Approved	23/07/2020	Paul Evans	<i>P. Evans</i>





**PARTICLE SIZE DISTRIBUTION
BS 1377 Part 2:1990
Wet Sieve, Clause 9.2**

Contract Number **49141**

Borehole/Pit No. **TP07**

Site Name **Porthcawl Drainage Scheme**

Sample No. **1**

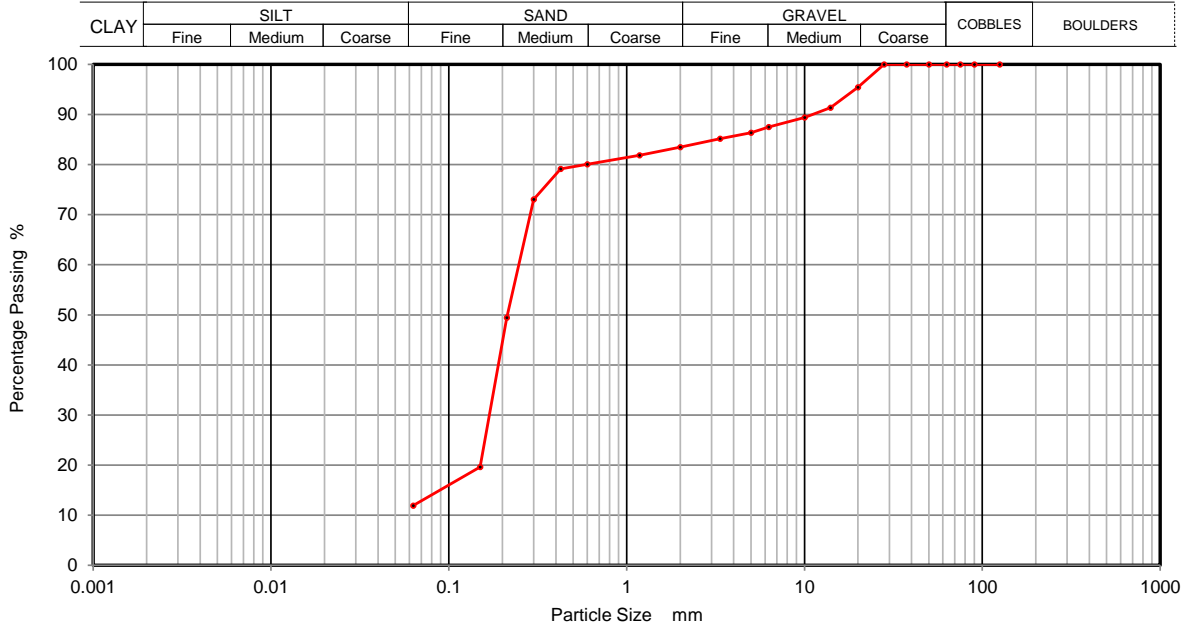
Soil Description **Brown clayey/silty fine to coarse gravelly fine to coarse SAND**

Depth Top **0.50**

Depth Base

Date Tested **20/07/2020**

Sample Type **B**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	95		
14	91		
10	89		
6.3	88		
5	86		
3.35	85		
2	83		
1.18	82		
0.6	80		
0.425	79		
0.3	73		
0.212	49		
0.15	20		
0.063	12		

Sample Proportions	% dry mass
Cobbles	0
Gravel	17
Sand	71
Silt and Clay	12

Remarks
Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	22/07/2020	Wayne Honey	<i>W. Honey</i>
RO/MH	Approved	23/07/2020	Paul Evans	<i>P. Evans</i>





**PARTICLE SIZE DISTRIBUTION
BS 1377 Part 2:1990
Wet Sieve, Clause 9.2**

Contract Number **49141**

Borehole/Pit No. **TP08**

Site Name **Porthcawl Drainage Scheme**

Sample No. **2**

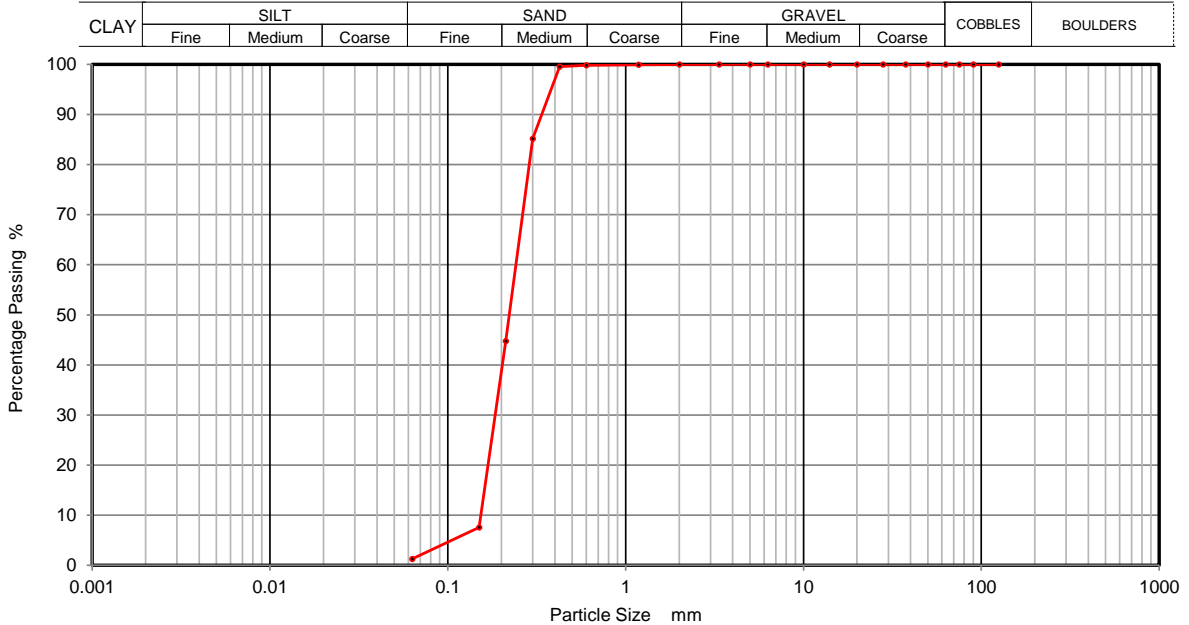
Soil Description **Brown slightly clayey/silty fine to coarse SAND**

Depth Top **1.00**

Depth Base **2.00**

Date Tested **20/07/2020**

Sample Type **B**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	100		
0.3	85		
0.212	45		
0.15	8		
0.063	1		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	99
Silt and Clay	1

Remarks
Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	22/07/2020	Wayne Honey	<i>W. Honey</i>
RO/MH	Approved	23/07/2020	Paul Evans	<i>P. Evans</i>





**PARTICLE SIZE DISTRIBUTION
BS 1377 Part 2:1990
Wet Sieve, Clause 9.2**

Contract Number **49141**

Borehole/Pit No. **TP09**

Site Name **Porthcawl Drainage Scheme**

Sample No. **2**

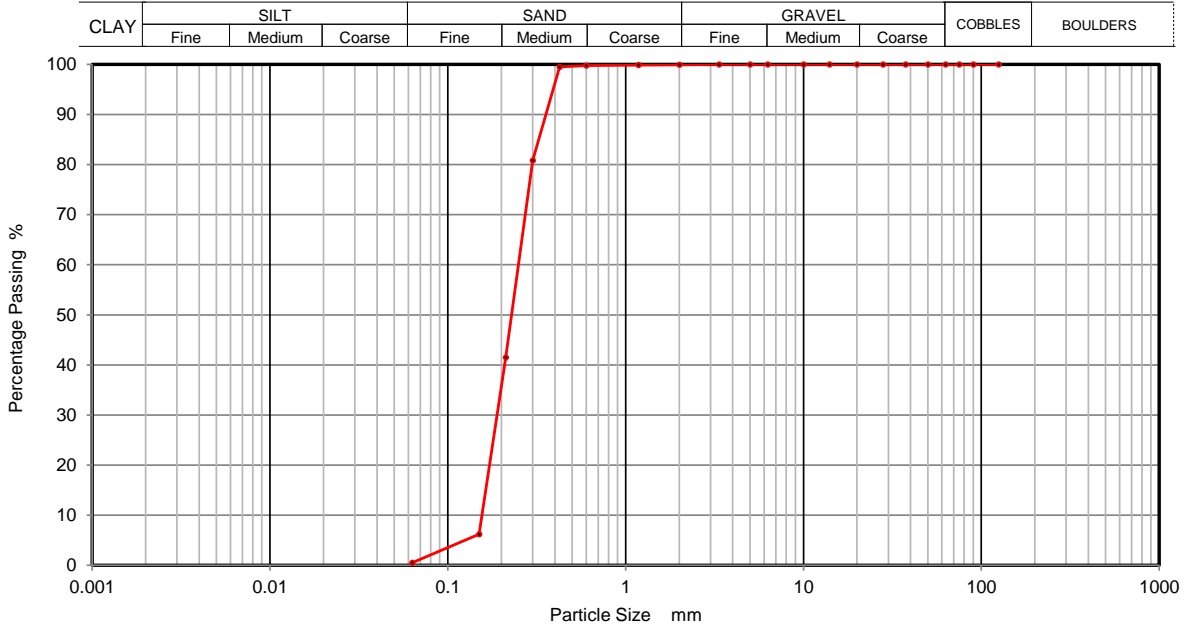
Soil Description **Brown slightly clayey/silty fine to medium SAND**

Depth Top **1.00**

Depth Base

Date Tested **20/07/2020**

Sample Type **B**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	99		
0.3	81		
0.212	41		
0.15	6		
0.063	1		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	99
Silt and Clay	1

Remarks
Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	22/07/2020	Wayne Honey	<i>W. Honey</i>
RO/MH	Approved	23/07/2020	Paul Evans	<i>P. Evans</i>



APPENDIX VI – GEOENVIRONMENTAL LABORATORY TEST RESULTS

BACTERIOLOGICAL TEST REPORT



Client: i2 Analytical LTD
#Address: 7 Woodshots Meadow
 Croxley Green Business Park
 Croxley Green
 Hertfordshire
 WD18 8YS

#Site: 20-17820
#FAO: Trevor Hill
#Order No: 12534,2017820

Job Number: M/182/79667
Report No.: 86919.1
#Date Tak'n: Wed, 17th Jun 2020 00:00
Date Rec'd: Wed, 8th Jul 2020

Stansted Laboratories LTD
 Unit 9-10, Riverside Industrial Estate
 27 Thames Road
 Barking, Essex
 IG11 0ND

 Tel: +44 (0)20 8594 5104
 Fax: +44 (0)20 8591 8762
 sales@stanstedlabs.co.uk
 www.stanstedlabs.co.uk

Directors: B. Patel, K.Patel

Items Marked ☐ are not included in the UKAS Schedule

Sample ID	#Description & Temperatures	Analysis	Result	Tested	Notes / Species
SL357128 <i>Soil</i>	1553366 (1020263)	Coliforms ☐	0 MPN/g	08/07/2020	
	Init Temp ☐ Temp > 1 Min ☐ Temp > 2 Min ☐	E.Coli ☐	0 MPN/g	08/07/2020	
		Clostridium perfringens ☐	4100 cfu/g	08/07/2020	
SL357129 <i>Soil</i>	1553366 (1020271)	Coliforms ☐	10300 MPN/g	08/07/2020	
	Init Temp ☐ Temp > 1 Min ☐ Temp > 2 Min ☐	E.Coli ☐	300 MPN/g	08/07/2020	
		Clostridium perfringens ☐	900 cfu/g	08/07/2020	
SL357130 <i>Soil</i>	1553368 (1020274)	Coliforms ☐	100 MPN/g	08/07/2020	
	Init Temp ☐ Temp > 1 Min ☐ Temp > 2 Min ☐	E.Coli ☐	0 MPN/g	08/07/2020	
		Clostridium perfringens ☐	2400 cfu/g	08/07/2020	

Method Codes


SLM/B312/M - Coliforms and Escherichia coli
 SLM/B316/M - Clostridium perfringens

Legend & Footnotes

cfu = Colony Forming Units
 mpn = Most Probable Number
 TNTC = Too Numerous to Count
 #Information supplied by the customer and can affect the validity of results.
 Sampling is not included in our UKAS Schedule.
 All Samples Analysed as received.

Test report authorised by :

B.Patel



Director

Date: 13/07/2020 10:26:28

Test Report checked by : Theepa Supikaran
13/07/2020 09:28:21

Disclaimer

Results relate to water samples tested and should not be reproduced except in full, without the written approval of the laboratory. Interpretations and opinions are not included in our UKAS schedule. 00:00 means time not declared.

----- END OF REPORT -----



Interim Report

Report No.: 20-15657-0

Initial Date of Issue:

Client Quantum Geotechnic Ltd

Client Address: Plas Newydd
Llanedi
Pontarddlais
Swansea
SA4 0FQ

Contact(s): Steffan Picton

Project Q0281 - Porthcawl Drainage Scheme

Quotation No.: Q20-20173 **Date Received:** 22-Jun-2020

Order No.: **Date Instructed:** 03-Jul-2020

No. of Samples: 4

Turnaround (Wkdays): 5 **Results Due:** 09-Jul-2020

Date Approved: **Subcon Results Due:** 24-Jul-2020

Approved By:

Details:

Please note that the interim data available has passed our Quality Control Criteria but has not been verified by an approved signatory and may be subject to amendment on approval. Chemtest cannot therefore be held responsible for decisions made on interim data sets but only for the data submitted on a final report containing an approval date and signature.

Results - Soil

Project: Q0281 - Porthcawl Drainage Scheme

Client: Quantum Geotechnic Ltd	Chemtest Job No.:				20-15657	20-15657	20-15657	20-15657
Quotation No.: Q20-20173	Chemtest Sample ID.:				1020263	1020267	1020271	1020274
Order No.:	Client Sample Ref.:				ES2	ES2	ES2	ES1
	Client Sample ID.:				2	2	2	1
	Sample Location:				TP1	TP2	TP6	TP3
	Sample Type:				SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				0.5	0.5	0.5	0.2
	Date Sampled:				17-Jun-2020	17-Jun-2020	17-Jun-2020	17-Jun-2020
	Asbestos Lab:				COVENTRY		COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD				
ACM Type	U	2192		N/A	-		-	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected		No Asbestos Detected	No Asbestos Detected
ACM Detection Stage	U	2192		N/A	-		-	-
Moisture	N	2030	%	0.020	3.0	4.5	3.1	14
Soil Colour	N	2040		N/A		Brown		Brown
Other Material	N	2040		N/A		None		Roots
Soil Texture	N	2040		N/A		Sand		Sand
Clostridium perfringens (Subcon)	SN		cfu/g	N/A	To Follow		To Follow	To Follow
E. coli (Subcon)	SN		cfu/g	N/A	To Follow		To Follow	To Follow
Total Coliforms (Subcon)	SN		cfu/g	N/A	To Follow		To Follow	To Follow
pH	U	2010		4.0	8.3		8.5	8.1
pH (2.5:1)	N	2010		4.0		8.6		8.2
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40		< 0.40	0.69
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	< 0.010	< 0.010	< 0.010	0.013
Sulphate (2:1 Extract)	U	2120	mg/kg	20		< 20		26
Total Sulphur	U	2175	%	0.010	0.015	0.010	0.011	0.030
Cyanide (Free)	U	2300	mg/kg	0.50				[B] < 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	[B] < 0.50		[B] < 0.50	[B] < 0.50
Thiocyanate	U	2300	mg/kg	5.0	[B] < 5.0		[B] < 5.0	[B] < 5.0
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50				2.6
Ammonium (Water Soluble)	U	2120	g/l	0.01				< 0.01
Iron (Total)	N	2430	mg/kg	100	11000		7400	13000
Sulphate (Acid Soluble)	U	2430	%	0.010		0.016		0.10
Arsenic	U	2450	mg/kg	1.0	15		11	17
Barium	U	2450	mg/kg	10	40		17	64
Beryllium	U	2450	mg/kg	1.0	< 1.0		< 1.0	< 1.0
Cadmium	U	2450	mg/kg	0.10	< 0.10		< 0.10	0.32
Chromium	U	2450	mg/kg	1.0	5.5		3.6	14
Copper	U	2450	mg/kg	0.50	1.6		1.2	12
Mercury	U	2450	mg/kg	0.10	< 0.10		< 0.10	0.11
Nickel	U	2450	mg/kg	0.50	6.3		4.5	13
Lead	U	2450	mg/kg	0.50	9.5		4.2	42
Selenium	U	2450	mg/kg	0.20				0.21
Vanadium	U	2450	mg/kg	5.0	14		10	21
Zinc	U	2450	mg/kg	0.50	21		14	78
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50		< 0.50	< 0.50

Results - Soil

Project: Q0281 - Porthcawl Drainage Scheme

Client: Quantum Geotechnic Ltd		Chemtest Job No.:		20-15657	20-15657	20-15657	20-15657
Quotation No.: Q20-20173		Chemtest Sample ID.:		1020263	1020267	1020271	1020274
Order No.:	Client Sample Ref.:		ES2	ES2	ES2	ES1	
	Client Sample ID.:		2	2	2	1	
	Sample Location:		TP1	TP2	TP6	TP3	
	Sample Type:		SOIL	SOIL	SOIL	SOIL	
	Top Depth (m):		0.5	0.5	0.5	0.2	
	Date Sampled:		17-Jun-2020	17-Jun-2020	17-Jun-2020	17-Jun-2020	
	Asbestos Lab:		COVENTRY		COVENTRY	COVENTRY	
Determinand	Accred.	SOP	Units	LOD			
Organic Matter	U	2625	%	0.40	< 0.40	< 0.40	4.8
Total TPH >C6-C40	U	2670	mg/kg	10	[B] < 10	[B] < 10	[B] < 10
Naphthalene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	0.41
Pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	0.77
Benzo[a]anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Chrysene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	< 2.0	< 2.0	< 2.0
Dichlorodifluoromethane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Chloromethane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Vinyl Chloride	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Bromomethane	U	2760	µg/kg	20	[B] < 20	[B] < 20	[B] < 20
Chloroethane	U	2760	µg/kg	2.0	[B] < 2.0	[B] < 2.0	[B] < 2.0
Trichlorofluoromethane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
1,1-Dichloroethene	U	2760	mg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Trans 1,2-Dichloroethene	U	2760	mg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
1,1-Dichloroethane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
cis 1,2-Dichloroethene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Bromochloromethane	U	2760	µg/kg	5.0	[B] < 5.0	[B] < 5.0	[B] < 5.0
Trichloromethane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
1,1,1-Trichloroethane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Tetrachloromethane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
1,1-Dichloropropene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Benzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
1,2-Dichloroethane	U	2760	µg/kg	2.0	[B] < 2.0	[B] < 2.0	[B] < 2.0
Trichloroethene	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0

Results - Soil

Project: Q0281 - Porthcawl Drainage Scheme

Client: Quantum Geotechnic Ltd		Chemtest Job No.:		20-15657	20-15657	20-15657	20-15657
Quotation No.: Q20-20173		Chemtest Sample ID.:		1020263	1020267	1020271	1020274
Order No.:	Client Sample Ref.:		ES2	ES2	ES2	ES1	
	Client Sample ID.:		2	2	2	1	
	Sample Location:		TP1	TP2	TP6	TP3	
	Sample Type:		SOIL	SOIL	SOIL	SOIL	
	Top Depth (m):		0.5	0.5	0.5	0.2	
	Date Sampled:		17-Jun-2020	17-Jun-2020	17-Jun-2020	17-Jun-2020	
	Asbestos Lab:		COVENTRY		COVENTRY	COVENTRY	
Determinand	Accred.	SOP	Units	LOD			
1,2-Dichloropropane	U	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
Dibromomethane	U	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
Bromodichloromethane	U	2760	µg/kg	5.0	[B] < 5.0		[B] < 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	[B] < 10		[B] < 10
Toluene	U	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	[B] < 10		[B] < 10
1,1,2-Trichloroethane	U	2760	µg/kg	10	[B] < 10		[B] < 10
Tetrachloroethene	U	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
1,3-Dichloropropane	U	2760	µg/kg	2.0	[B] < 2.0		[B] < 2.0
Dibromochloromethane	U	2760	µg/kg	10	[B] < 10		[B] < 10
1,2-Dibromoethane	U	2760	µg/kg	5.0	[B] < 5.0		[B] < 5.0
Chlorobenzene	U	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
1,1,1,2-Tetrachloroethane	U	2760	µg/kg	2.0	[B] < 2.0		[B] < 2.0
Ethylbenzene	U	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
m & p-Xylene	U	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
o-Xylene	U	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
Styrene	U	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
Tribromomethane	U	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
Isopropylbenzene	U	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
Bromobenzene	U	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	[B] < 50		[B] < 50
N-Propylbenzene	U	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
2-Chlorotoluene	U	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
1,3,5-Trimethylbenzene	U	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
4-Chlorotoluene	U	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
Tert-Butylbenzene	U	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
1,2,4-Trimethylbenzene	U	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
Sec-Butylbenzene	U	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
1,3-Dichlorobenzene	U	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
4-Isopropyltoluene	U	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
1,4-Dichlorobenzene	U	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
N-Butylbenzene	U	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
1,2-Dichlorobenzene	U	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
1,2-Dibromo-3-Chloropropane	U	2760	µg/kg	50	[B] < 50		[B] < 50
1,2,4-Trichlorobenzene	U	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
Hexachlorobutadiene	U	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
1,2,3-Trichlorobenzene	U	2760	µg/kg	2.0	[B] < 2.0		[B] < 2.0

Results - Soil

Project: Q0281 - Porthcawl Drainage Scheme

Client: Quantum Geotechnic Ltd		Chemtest Job No.:		20-15657	20-15657	20-15657	20-15657
Quotation No.: Q20-20173		Chemtest Sample ID.:		1020263	1020267	1020271	1020274
Order No.:	Client Sample Ref.:	ES2	ES2	ES2	ES1		
	Client Sample ID.:	2	2	2	1		
	Sample Location:	TP1	TP2	TP6	TP3		
	Sample Type:	SOIL	SOIL	SOIL	SOIL		
	Top Depth (m):	0.5	0.5	0.5	0.2		
	Date Sampled:	17-Jun-2020	17-Jun-2020	17-Jun-2020	17-Jun-2020		
	Asbestos Lab:	COVENTRY		COVENTRY	COVENTRY		
Determinand	Accred.	SOP	Units	LOD			
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
N-Nitrosodimethylamine	U	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
Phenol	U	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
2-Chlorophenol	U	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
Bis-(2-Chloroethyl)Ether	U	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
1,3-Dichlorobenzene	U	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
1,2-Dichlorobenzene	U	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
2-Methylphenol	U	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
Bis(2-Chloroisopropyl)Ether	U	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
Hexachloroethane	N	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
N-Nitrosodi-n-propylamine	U	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
4-Methylphenol	U	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
Nitrobenzene	U	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
Isophorone	U	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
Bis(2-Chloroethoxy)Methane	U	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
2,4-Dichlorophenol	U	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
1,2,4-Trichlorobenzene	U	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
Naphthalene	U	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
Hexachlorobutadiene	U	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
4-Chloro-3-Methylphenol	U	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
2-Methylnaphthalene	U	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
2,4,6-Trichlorophenol	U	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
2,4,5-Trichlorophenol	U	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
2-Chloronaphthalene	U	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
2-Nitroaniline	U	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
Acenaphthylene	U	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
Dimethylphthalate	U	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
2,6-Dinitrotoluene	U	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
Acenaphthene	U	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
Dibenzofuran	U	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50

Results - Soil

Project: Q0281 - Porthcawl Drainage Scheme

Client: Quantum Geotechnic Ltd		Chemtest Job No.:		20-15657	20-15657	20-15657	20-15657
Quotation No.: Q20-20173		Chemtest Sample ID.:		1020263	1020267	1020271	1020274
Order No.:		Client Sample Ref.:		ES2	ES2	ES2	ES1
		Client Sample ID.:		2	2	2	1
		Sample Location:		TP1	TP2	TP6	TP3
		Sample Type:		SOIL	SOIL	SOIL	SOIL
		Top Depth (m):		0.5	0.5	0.5	0.2
		Date Sampled:		17-Jun-2020	17-Jun-2020	17-Jun-2020	17-Jun-2020
		Asbestos Lab:		COVENTRY		COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD			
4-Chlorophenylphenylether	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
2,4-Dinitrotoluene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Fluorene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Diethyl Phthalate	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
4-Nitroaniline	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Azobenzene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
4-Bromophenylphenyl Ether	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Hexachlorobenzene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Phenanthrene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Anthracene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Carbazole	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Di-N-Butyl Phthalate	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Fluoranthene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Pyrene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Butylbenzyl Phthalate	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Benzo[a]anthracene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Chrysene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Di-N-Octyl Phthalate	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Benzo[b]fluoranthene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Benzo[k]fluoranthene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Benzo[a]pyrene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Indeno(1,2,3-c,d)Pyrene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Dibenz(a,h)Anthracene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Benzo[g,h,i]perylene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Total Phenols	U	2920	mg/kg	0.30	< 0.30	< 0.30	< 0.30

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Eurofins Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request. The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1020263	ES2	2	TP1	17-Jun-2020	B	Amber Glass 250ml
1020263	ES2	2	TP1	17-Jun-2020	B	Amber Glass 60ml
1020263	ES2	2	TP1	17-Jun-2020	B	Plastic Tub 500g
1020271	ES2	2	TP6	17-Jun-2020	B	Amber Glass 250ml
1020271	ES2	2	TP6	17-Jun-2020	B	Amber Glass 60ml
1020271	ES2	2	TP6	17-Jun-2020	B	Plastic Tub 500g
1020274	ES1	1	TP3	17-Jun-2020	B	Amber Glass 250ml
1020274	ES1	1	TP3	17-Jun-2020	B	Amber Glass 60ml
1020274	ES1	1	TP3	17-Jun-2020	B	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2175	Total Sulphur in Soils	Total Sulphur	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2325	Sulphide in Soils	Sulphide	Steam distillation with sulphuric acid / analysis by 'Aquakem 600' Discrete Analyser, using N,N-dimethyl-p-phenylenediamine.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

customerservices@chemtest.com



Final Report

Report No.: 20-15657-1
Initial Date of Issue: 04-Aug-2020
Client: Quantum Geotechnic Ltd
Client Address: Plas Newydd
Llanedi
Pontarddlais
Swansea
SA4 0FQ
Contact(s): Steffan Picton
Project: Q0281 - Porthcawl Drainage Scheme
Quotation No.: Q20-20173
Date Received: 22-Jun-2020
Order No.:
Date Instructed: 03-Jul-2020
No. of Samples: 4
Turnaround (Wkdays): 5
Results Due: 09-Jul-2020
Date Approved: 04-Aug-2020
Subcon Results Due: 24-Jul-2020

Approved By:

Details: Glynn Harvey, Technical Manager

Results - Soil

Project: Q0281 - Porthcawl Drainage Scheme

Client: Quantum Geotechnic Ltd		Chemtest Job No.:		20-15657	20-15657	20-15657	20-15657
Quotation No.: Q20-20173		Chemtest Sample ID.:		1020263	1020267	1020271	1020274
Order No.:		Client Sample Ref.:		ES2	ES2	ES2	ES1
		Client Sample ID.:		2	2	2	1
		Sample Location:		TP1	TP2	TP6	TP3
		Sample Type:		SOIL	SOIL	SOIL	SOIL
		Top Depth (m):		0.5	0.5	0.5	0.2
		Date Sampled:		17-Jun-2020	17-Jun-2020	17-Jun-2020	17-Jun-2020
		Asbestos Lab:		COVENTRY		COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD			
ACM Type	U	2192		N/A	-		-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected		No Asbestos Detected
ACM Detection Stage	U	2192		N/A	-		-
Moisture	N	2030	%	0.020	3.0	4.5	3.1
Soil Colour	N	2040		N/A		Brown	Brown
Other Material	N	2040		N/A		None	Roots
Soil Texture	N	2040		N/A		Sand	Sand
Clostridium perfringens (Subcon)	SN		cfu/g	N/A	See Attached		See Attached
E. coli (Subcon)	SN		cfu/g	N/A	See Attached		See Attached
Total Coliforms (Subcon)	SN		cfu/g	N/A	See Attached		See Attached
pH	M	2010		4.0	8.3		8.5
pH (2.5:1)	N	2010		4.0		8.6	
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	< 0.40		< 0.40
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	< 0.010	< 0.010	< 0.010
Sulphate (2:1 Extract)	M	2120	mg/kg	20		< 20	
Total Sulphur	M	2175	%	0.010	0.015	0.010	0.011
Cyanide (Free)	M	2300	mg/kg	0.50			[B] < 0.50
Cyanide (Total)	M	2300	mg/kg	0.50	[B] < 0.50		[B] < 0.50
Thiocyanate	M	2300	mg/kg	5.0	[B] < 5.0		[B] < 5.0
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50			2.6
Ammonium (Water Soluble)	M	2120	g/l	0.01			< 0.01
Iron (Total)	N	2430	mg/kg	100	11000		7400
Sulphate (Acid Soluble)	M	2430	%	0.010		0.016	
Arsenic	M	2450	mg/kg	1.0	15		11
Barium	M	2450	mg/kg	10	40		17
Beryllium	U	2450	mg/kg	1.0	< 1.0		< 1.0
Cadmium	M	2450	mg/kg	0.10	< 0.10		< 0.10
Chromium	M	2450	mg/kg	1.0	5.5		3.6
Copper	M	2450	mg/kg	0.50	1.6		1.2
Mercury	M	2450	mg/kg	0.10	< 0.10		< 0.10
Nickel	M	2450	mg/kg	0.50	6.3		4.5
Lead	M	2450	mg/kg	0.50	9.5		4.2
Selenium	M	2450	mg/kg	0.20			0.21
Vanadium	U	2450	mg/kg	5.0	14		10
Zinc	M	2450	mg/kg	0.50	21		14
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50		< 0.50

Results - Soil

Project: Q0281 - Porthcawl Drainage Scheme

Client: Quantum Geotechnic Ltd		Chemtest Job No.:		20-15657	20-15657	20-15657	20-15657
Quotation No.: Q20-20173		Chemtest Sample ID.:		1020263	1020267	1020271	1020274
Order No.:		Client Sample Ref.:		ES2	ES2	ES2	ES1
		Client Sample ID.:		2	2	2	1
		Sample Location:		TP1	TP2	TP6	TP3
		Sample Type:		SOIL	SOIL	SOIL	SOIL
		Top Depth (m):		0.5	0.5	0.5	0.2
		Date Sampled:		17-Jun-2020	17-Jun-2020	17-Jun-2020	17-Jun-2020
		Asbestos Lab:		COVENTRY		COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD			
Organic Matter	M	2625	%	0.40	< 0.40	< 0.40	4.8
Total TPH >C6-C40	M	2670	mg/kg	10	[B] < 10	[B] < 10	[B] < 10
Naphthalene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Fluorene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Anthracene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	0.41
Pyrene	M	2700	mg/kg	0.10	< 0.10	< 0.10	0.77
Benzo[a]anthracene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Chrysene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	M	2700	mg/kg	2.0	< 2.0	< 2.0	< 2.0
Dichlorodifluoromethane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Chloromethane	M	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Vinyl Chloride	M	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Bromomethane	M	2760	µg/kg	20	[B] < 20	[B] < 20	[B] < 20
Chloroethane	U	2760	µg/kg	2.0	[B] < 2.0	[B] < 2.0	[B] < 2.0
Trichlorofluoromethane	M	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
1,1-Dichloroethene	M	2760	mg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Trans 1,2-Dichloroethene	M	2760	mg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
1,1-Dichloroethane	M	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
cis 1,2-Dichloroethene	M	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Bromochloromethane	U	2760	µg/kg	5.0	[B] < 5.0	[B] < 5.0	[B] < 5.0
Trichloromethane	M	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
1,1,1-Trichloroethane	M	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Tetrachloromethane	M	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
1,1-Dichloropropene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Benzene	M	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
1,2-Dichloroethane	M	2760	µg/kg	2.0	[B] < 2.0	[B] < 2.0	[B] < 2.0
Trichloroethene	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0

Results - Soil

Project: Q0281 - Porthcawl Drainage Scheme

Client: Quantum Geotechnic Ltd		Chemtest Job No.:		20-15657	20-15657	20-15657	20-15657
Quotation No.: Q20-20173		Chemtest Sample ID.:		1020263	1020267	1020271	1020274
Order No.:		Client Sample Ref.:		ES2	ES2	ES2	ES1
		Client Sample ID.:		2	2	2	1
		Sample Location:		TP1	TP2	TP6	TP3
		Sample Type:		SOIL	SOIL	SOIL	SOIL
		Top Depth (m):		0.5	0.5	0.5	0.2
		Date Sampled:		17-Jun-2020	17-Jun-2020	17-Jun-2020	17-Jun-2020
		Asbestos Lab:		COVENTRY		COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD			
1,2-Dichloropropane	M	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
Dibromomethane	M	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
Bromodichloromethane	M	2760	µg/kg	5.0	[B] < 5.0		[B] < 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	[B] < 10		[B] < 10
Toluene	M	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	[B] < 10		[B] < 10
1,1,2-Trichloroethane	M	2760	µg/kg	10	[B] < 10		[B] < 10
Tetrachloroethene	M	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
1,3-Dichloropropane	U	2760	µg/kg	2.0	[B] < 2.0		[B] < 2.0
Dibromochloromethane	U	2760	µg/kg	10	[B] < 10		[B] < 10
1,2-Dibromoethane	M	2760	µg/kg	5.0	[B] < 5.0		[B] < 5.0
Chlorobenzene	M	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
1,1,1,2-Tetrachloroethane	M	2760	µg/kg	2.0	[B] < 2.0		[B] < 2.0
Ethylbenzene	M	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
m & p-Xylene	M	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
o-Xylene	M	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
Styrene	M	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
Tribromomethane	U	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
Isopropylbenzene	M	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
Bromobenzene	M	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	[B] < 50		[B] < 50
N-Propylbenzene	U	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
2-Chlorotoluene	M	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
1,3,5-Trimethylbenzene	M	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
4-Chlorotoluene	U	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
Tert-Butylbenzene	U	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
1,2,4-Trimethylbenzene	M	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
Sec-Butylbenzene	U	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
1,3-Dichlorobenzene	M	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
4-Isopropyltoluene	U	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
1,4-Dichlorobenzene	M	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
N-Butylbenzene	U	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
1,2-Dichlorobenzene	M	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
1,2-Dibromo-3-Chloropropane	U	2760	µg/kg	50	[B] < 50		[B] < 50
1,2,4-Trichlorobenzene	M	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
Hexachlorobutadiene	U	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
1,2,3-Trichlorobenzene	U	2760	µg/kg	2.0	[B] < 2.0		[B] < 2.0

Results - Soil

Project: Q0281 - Porthcawl Drainage Scheme

Client: Quantum Geotechnic Ltd		Chemtest Job No.:		20-15657	20-15657	20-15657	20-15657
Quotation No.: Q20-20173		Chemtest Sample ID.:		1020263	1020267	1020271	1020274
Order No.:		Client Sample Ref.:		ES2	ES2	ES2	ES1
		Client Sample ID.:		2	2	2	1
		Sample Location:		TP1	TP2	TP6	TP3
		Sample Type:		SOIL	SOIL	SOIL	SOIL
		Top Depth (m):		0.5	0.5	0.5	0.2
		Date Sampled:		17-Jun-2020	17-Jun-2020	17-Jun-2020	17-Jun-2020
		Asbestos Lab:		COVENTRY		COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD			
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
N-Nitrosodimethylamine	M	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
Phenol	M	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
2-Chlorophenol	M	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
Bis-(2-Chloroethyl)Ether	M	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
1,3-Dichlorobenzene	M	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
1,2-Dichlorobenzene	M	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
2-Methylphenol	M	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
Bis(2-Chloroisopropyl)Ether	M	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
Hexachloroethane	N	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
N-Nitrosodi-n-propylamine	M	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
4-Methylphenol	M	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
Nitrobenzene	M	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
Isophorone	M	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
Bis(2-Chloroethoxy)Methane	M	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
2,4-Dichlorophenol	M	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
1,2,4-Trichlorobenzene	M	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
Naphthalene	M	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
Hexachlorobutadiene	M	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
4-Chloro-3-Methylphenol	M	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
2-Methylnaphthalene	M	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
2,4,6-Trichlorophenol	M	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
2,4,5-Trichlorophenol	M	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
2-Chloronaphthalene	M	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
2-Nitroaniline	M	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
Acenaphthylene	M	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
Dimethylphthalate	M	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
2,6-Dinitrotoluene	M	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
Acenaphthene	M	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
Dibenzofuran	M	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50

Results - Soil

Project: Q0281 - Porthcawl Drainage Scheme

Client: Quantum Geotechnic Ltd		Chemtest Job No.:		20-15657	20-15657	20-15657	20-15657
Quotation No.: Q20-20173		Chemtest Sample ID.:		1020263	1020267	1020271	1020274
Order No.:		Client Sample Ref.:		ES2	ES2	ES2	ES1
		Client Sample ID.:		2	2	2	1
		Sample Location:		TP1	TP2	TP6	TP3
		Sample Type:		SOIL	SOIL	SOIL	SOIL
		Top Depth (m):		0.5	0.5	0.5	0.2
		Date Sampled:		17-Jun-2020	17-Jun-2020	17-Jun-2020	17-Jun-2020
		Asbestos Lab:		COVENTRY		COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD			
4-Chlorophenylphenylether	M	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
2,4-Dinitrotoluene	M	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Fluorene	M	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Diethyl Phthalate	M	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
4-Nitroaniline	M	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Azobenzene	M	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
4-Bromophenylphenyl Ether	M	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Hexachlorobenzene	M	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Phenanthrene	M	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Anthracene	M	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Carbazole	M	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Di-N-Butyl Phthalate	M	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Fluoranthene	M	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Pyrene	M	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Butylbenzyl Phthalate	M	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Benzo[a]anthracene	M	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Chrysene	M	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Di-N-Octyl Phthalate	M	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Benzo[b]fluoranthene	M	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Benzo[k]fluoranthene	M	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Benzo[a]pyrene	M	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Indeno(1,2,3-c,d)Pyrene	M	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Dibenz(a,h)Anthracene	M	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Benzo[g,h,i]perylene	M	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Total Phenols	M	2920	mg/kg	0.30	< 0.30	< 0.30	< 0.30

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request. The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1020263	ES2	2	TP1	17-Jun-2020	B	Amber Glass 250ml
1020263	ES2	2	TP1	17-Jun-2020	B	Amber Glass 60ml
1020263	ES2	2	TP1	17-Jun-2020	B	Plastic Tub 500g
1020271	ES2	2	TP6	17-Jun-2020	B	Amber Glass 250ml
1020271	ES2	2	TP6	17-Jun-2020	B	Amber Glass 60ml
1020271	ES2	2	TP6	17-Jun-2020	B	Plastic Tub 500g
1020274	ES1	1	TP3	17-Jun-2020	B	Amber Glass 250ml
1020274	ES1	1	TP3	17-Jun-2020	B	Amber Glass 60ml
1020274	ES1	1	TP3	17-Jun-2020	B	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2175	Total Sulphur in Soils	Total Sulphur	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2325	Sulphide in Soils	Sulphide	Steam distillation with sulphuric acid / analysis by 'Aquakem 600' Discrete Analyser, using N,N-dimethyl-p-phenylenediamine.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

customerservices@chemtest.com



Amended Report

Report No.: 20-15657-2

Initial Date of Issue: 04-Aug-2020 **Date of Re-Issue:** 04-Aug-2020

Client: Quantum Geotechnic Ltd

Client Address: Plas Newydd
Llanedi
Pontarddulais
Swansea
SA4 0FQ

Contact(s): Steffan Picton

Project: Q0281 - Porthcawl Drainage Scheme

Quotation No.: Q20-20173 **Date Received:** 22-Jun-2020

Order No.: **Date Instructed:** 03-Jul-2020

No. of Samples: 4

Turnaround (Wkdays): 5 **Results Due:** 09-Jul-2020

Date Approved: 04-Aug-2020 **Subcon Results Due:** 24-Jul-2020

Approved By:

Details: Glynn Harvey, Technical Manager

Results - Soil

Project: Q0281 - Porthcawl Drainage Scheme

Client: Quantum Geotechnic Ltd		Chemtest Job No.:		20-15657	20-15657	20-15657	20-15657
Quotation No.: Q20-20173		Chemtest Sample ID.:		1020263	1020267	1020271	1020274
Order No.:		Client Sample Ref.:		ES2	ES2	ES2	ES1
		Client Sample ID.:		2	2	2	1
		Sample Location:		TP1	TP2	TP6	TP3
		Sample Type:		SOIL	SOIL	SOIL	SOIL
		Top Depth (m):		0.5	0.5	0.5	0.2
		Date Sampled:		17-Jun-2020	17-Jun-2020	17-Jun-2020	17-Jun-2020
		Asbestos Lab:		COVENTRY		COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD			
ACM Type	U	2192		N/A	-		-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected		No Asbestos Detected
ACM Detection Stage	U	2192		N/A	-		-
Moisture	N	2030	%	0.020	3.0	4.5	3.1
Soil Colour	N	2040		N/A		Brown	Brown
Other Material	N	2040		N/A		None	Roots
Soil Texture	N	2040		N/A		Sand	Sand
Clostridium perfringens (Subcon)	SN		cfu/g	N/A	See Attached		See Attached
E. coli (Subcon)	SN		cfu/g	N/A	See Attached		See Attached
Total Coliforms (Subcon)	SN		cfu/g	N/A	See Attached		See Attached
pH	M	2010		4.0	8.3		8.5
pH (2.5:1)	N	2010		4.0		8.6	
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	< 0.40		< 0.40
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	< 0.010	< 0.010	< 0.010
Sulphate (2:1 Extract)	M	2120	mg/kg	20		< 20	
Total Sulphur	M	2175	%	0.010	0.015	0.010	0.011
Cyanide (Free)	M	2300	mg/kg	0.50			[B] < 0.50
Cyanide (Total)	M	2300	mg/kg	0.50	[B] < 0.50		[B] < 0.50
Thiocyanate	M	2300	mg/kg	5.0	[B] < 5.0		[B] < 5.0
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50			2.6
Ammonium (Water Soluble)	M	2120	g/l	0.01			< 0.01
Iron (Total)	N	2430	mg/kg	100	11000		7400
Sulphate (Acid Soluble)	M	2430	%	0.010		0.016	
Arsenic	M	2450	mg/kg	1.0	15		11
Barium	M	2450	mg/kg	10	40		17
Beryllium	U	2450	mg/kg	1.0	< 1.0		< 1.0
Cadmium	M	2450	mg/kg	0.10	< 0.10		< 0.10
Chromium	M	2450	mg/kg	1.0	5.5		3.6
Copper	M	2450	mg/kg	0.50	1.6		1.2
Mercury	M	2450	mg/kg	0.10	< 0.10		< 0.10
Nickel	M	2450	mg/kg	0.50	6.3		4.5
Lead	M	2450	mg/kg	0.50	9.5		4.2
Selenium	M	2450	mg/kg	0.20			0.21
Vanadium	U	2450	mg/kg	5.0	14		10
Zinc	M	2450	mg/kg	0.50	21		14
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50		< 0.50

Results - Soil

Project: Q0281 - Porthcawl Drainage Scheme

Client: Quantum Geotechnic Ltd		Chemtest Job No.:		20-15657	20-15657	20-15657	20-15657
Quotation No.: Q20-20173		Chemtest Sample ID.:		1020263	1020267	1020271	1020274
Order No.:		Client Sample Ref.:		ES2	ES2	ES2	ES1
		Client Sample ID.:		2	2	2	1
		Sample Location:		TP1	TP2	TP6	TP3
		Sample Type:		SOIL	SOIL	SOIL	SOIL
		Top Depth (m):		0.5	0.5	0.5	0.2
		Date Sampled:		17-Jun-2020	17-Jun-2020	17-Jun-2020	17-Jun-2020
		Asbestos Lab:		COVENTRY		COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD			
Organic Matter	M	2625	%	0.40	< 0.40		4.8
Total TPH >C6-C40	M	2670	mg/kg	10	[B] < 10	[B] < 10	[B] < 10
Naphthalene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Fluorene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Anthracene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	0.41
Pyrene	M	2700	mg/kg	0.10	< 0.10	< 0.10	0.77
Benzo[a]anthracene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Chrysene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	M	2700	mg/kg	2.0	< 2.0	< 2.0	< 2.0
Dichlorodifluoromethane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Chloromethane	M	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Vinyl Chloride	M	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Bromomethane	M	2760	µg/kg	20	[B] < 20	[B] < 20	[B] < 20
Chloroethane	U	2760	µg/kg	2.0	[B] < 2.0	[B] < 2.0	[B] < 2.0
Trichlorofluoromethane	M	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
1,1-Dichloroethene	M	2760	mg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Trans 1,2-Dichloroethene	M	2760	mg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
1,1-Dichloroethane	M	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
cis 1,2-Dichloroethene	M	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Bromochloromethane	U	2760	µg/kg	5.0	[B] < 5.0	[B] < 5.0	[B] < 5.0
Trichloromethane	M	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
1,1,1-Trichloroethane	M	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Tetrachloromethane	M	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
1,1-Dichloropropene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Benzene	M	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
1,2-Dichloroethane	M	2760	µg/kg	2.0	[B] < 2.0	[B] < 2.0	[B] < 2.0
Trichloroethene	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0

Results - Soil

Project: Q0281 - Porthcawl Drainage Scheme

Client: Quantum Geotechnic Ltd		Chemtest Job No.:		20-15657	20-15657	20-15657	20-15657
Quotation No.: Q20-20173		Chemtest Sample ID.:		1020263	1020267	1020271	1020274
Order No.:	Client Sample Ref.:		ES2	ES2	ES2	ES1	
	Client Sample ID.:		2	2	2	1	
	Sample Location:		TP1	TP2	TP6	TP3	
	Sample Type:		SOIL	SOIL	SOIL	SOIL	
	Top Depth (m):		0.5	0.5	0.5	0.2	
	Date Sampled:		17-Jun-2020	17-Jun-2020	17-Jun-2020	17-Jun-2020	
	Asbestos Lab:		COVENTRY		COVENTRY	COVENTRY	
Determinand	Accred.	SOP	Units	LOD			
1,2-Dichloropropane	M	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
Dibromomethane	M	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
Bromodichloromethane	M	2760	µg/kg	5.0	[B] < 5.0		[B] < 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	[B] < 10		[B] < 10
Toluene	M	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	[B] < 10		[B] < 10
1,1,2-Trichloroethane	M	2760	µg/kg	10	[B] < 10		[B] < 10
Tetrachloroethene	M	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
1,3-Dichloropropane	U	2760	µg/kg	2.0	[B] < 2.0		[B] < 2.0
Dibromochloromethane	U	2760	µg/kg	10	[B] < 10		[B] < 10
1,2-Dibromoethane	M	2760	µg/kg	5.0	[B] < 5.0		[B] < 5.0
Chlorobenzene	M	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
1,1,1,2-Tetrachloroethane	M	2760	µg/kg	2.0	[B] < 2.0		[B] < 2.0
Ethylbenzene	M	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
m & p-Xylene	M	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
o-Xylene	M	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
Styrene	M	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
Tribromomethane	U	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
Isopropylbenzene	M	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
Bromobenzene	M	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	[B] < 50		[B] < 50
N-Propylbenzene	U	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
2-Chlorotoluene	M	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
1,3,5-Trimethylbenzene	M	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
4-Chlorotoluene	U	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
Tert-Butylbenzene	U	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
1,2,4-Trimethylbenzene	M	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
Sec-Butylbenzene	U	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
1,3-Dichlorobenzene	M	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
4-Isopropyltoluene	U	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
1,4-Dichlorobenzene	M	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
N-Butylbenzene	U	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
1,2-Dichlorobenzene	M	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
1,2-Dibromo-3-Chloropropane	U	2760	µg/kg	50	[B] < 50		[B] < 50
1,2,4-Trichlorobenzene	M	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
Hexachlorobutadiene	U	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
1,2,3-Trichlorobenzene	U	2760	µg/kg	2.0	[B] < 2.0		[B] < 2.0

Results - Soil

Project: Q0281 - Porthcawl Drainage Scheme

Client: Quantum Geotechnic Ltd		Chemtest Job No.:		20-15657	20-15657	20-15657	20-15657
Quotation No.: Q20-20173		Chemtest Sample ID.:		1020263	1020267	1020271	1020274
Order No.:		Client Sample Ref.:		ES2	ES2	ES2	ES1
		Client Sample ID.:		2	2	2	1
		Sample Location:		TP1	TP2	TP6	TP3
		Sample Type:		SOIL	SOIL	SOIL	SOIL
		Top Depth (m):		0.5	0.5	0.5	0.2
		Date Sampled:		17-Jun-2020	17-Jun-2020	17-Jun-2020	17-Jun-2020
		Asbestos Lab:		COVENTRY		COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD			
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	[B] < 1.0		[B] < 1.0
N-Nitrosodimethylamine	M	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
Phenol	M	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
2-Chlorophenol	M	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
Bis-(2-Chloroethyl)Ether	M	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
1,3-Dichlorobenzene	M	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
1,2-Dichlorobenzene	M	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
2-Methylphenol	M	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
Bis(2-Chloroisopropyl)Ether	M	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
Hexachloroethane	N	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
N-Nitrosodi-n-propylamine	M	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
4-Methylphenol	M	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
Nitrobenzene	M	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
Isophorone	M	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
Bis(2-Chloroethoxy)Methane	M	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
2,4-Dichlorophenol	M	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
1,2,4-Trichlorobenzene	M	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
Naphthalene	M	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
Hexachlorobutadiene	M	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
4-Chloro-3-Methylphenol	M	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
2-Methylnaphthalene	M	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
2,4,6-Trichlorophenol	M	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
2,4,5-Trichlorophenol	M	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
2-Chloronaphthalene	M	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
2-Nitroaniline	M	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
Acenaphthylene	M	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
Dimethylphthalate	M	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
2,6-Dinitrotoluene	M	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
Acenaphthene	M	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50
Dibenzofuran	M	2790	mg/kg	0.50	[B] < 0.50		[B] < 0.50

Results - Soil

Project: Q0281 - Porthcawl Drainage Scheme

Client: Quantum Geotechnic Ltd		Chemtest Job No.:		20-15657	20-15657	20-15657	20-15657
Quotation No.: Q20-20173		Chemtest Sample ID.:		1020263	1020267	1020271	1020274
Order No.:		Client Sample Ref.:		ES2	ES2	ES2	ES1
		Client Sample ID.:		2	2	2	1
		Sample Location:		TP1	TP2	TP6	TP3
		Sample Type:		SOIL	SOIL	SOIL	SOIL
		Top Depth (m):		0.5	0.5	0.5	0.2
		Date Sampled:		17-Jun-2020	17-Jun-2020	17-Jun-2020	17-Jun-2020
		Asbestos Lab:		COVENTRY		COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD			
4-Chlorophenylphenylether	M	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
2,4-Dinitrotoluene	M	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Fluorene	M	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Diethyl Phthalate	M	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
4-Nitroaniline	M	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Azobenzene	M	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
4-Bromophenylphenyl Ether	M	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Hexachlorobenzene	M	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Phenanthrene	M	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Anthracene	M	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Carbazole	M	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Di-N-Butyl Phthalate	M	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Fluoranthene	M	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Pyrene	M	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Butylbenzyl Phthalate	M	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Benzo[a]anthracene	M	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Chrysene	M	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Di-N-Octyl Phthalate	M	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Benzo[b]fluoranthene	M	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Benzo[k]fluoranthene	M	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Benzo[a]pyrene	M	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Indeno(1,2,3-c,d)Pyrene	M	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Dibenz(a,h)Anthracene	M	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Benzo[g,h,i]perylene	M	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Total Phenols	M	2920	mg/kg	0.30	< 0.30	< 0.30	< 0.30

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request. The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1020263	ES2	2	TP1	17-Jun-2020	B	Amber Glass 250ml
1020263	ES2	2	TP1	17-Jun-2020	B	Amber Glass 60ml
1020263	ES2	2	TP1	17-Jun-2020	B	Plastic Tub 500g
1020271	ES2	2	TP6	17-Jun-2020	B	Amber Glass 250ml
1020271	ES2	2	TP6	17-Jun-2020	B	Amber Glass 60ml
1020271	ES2	2	TP6	17-Jun-2020	B	Plastic Tub 500g
1020274	ES1	1	TP3	17-Jun-2020	B	Amber Glass 250ml
1020274	ES1	1	TP3	17-Jun-2020	B	Amber Glass 60ml
1020274	ES1	1	TP3	17-Jun-2020	B	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2175	Total Sulphur in Soils	Total Sulphur	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2325	Sulphide in Soils	Sulphide	Steam distillation with sulphuric acid / analysis by 'Aquakem 600' Discrete Analyser, using N,N-dimethyl-p-phenylenediamine.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

customerservices@chemtest.com



Amended Report

Report No.:	20-17839-3	Date of Re-Issue:	04-Sep-2020
Initial Date of Issue:	17-Jul-2020		
Client	Quantum Geotechnic Ltd		
Client Address:	Plas Newydd Llanedi Pontarddulais Swansea SA4 0FQ		
Contact(s):	Steffan Picton		
Project	Q0281 Porthcawl Drainage Scheme		
Quotation No.:	Q20-20173	Date Received:	06-Jul-2020
Order No.:		Date Instructed:	13-Jul-2020
No. of Samples:	9		
Turnaround (Wkdays):	39	Results Due:	04-Sep-2020
Date Approved:	04-Sep-2020	Subcon Results Due:	03-Aug-2020

Approved By:

Details: Glynn Harvey, Technical Manager

Results - Leachate

Project: Q0281 Porthcawl Drainage Scheme

Client: Quantum Geotechnic Ltd		Chemtest Job No.:			20-17839	20-17839	20-17839
Quotation No.: Q20-20173		Chemtest Sample ID.:			1030440	1030441	1030446
		Client Sample ID.:			1	2	2
		Sample Location:			TP03	TP04	TP09
		Sample Type:			SOIL	SOIL	SOIL
		Top Depth (m):			0.2	0.5	0.5
		Date Sampled:			08-Jul-2020	08-Jul-2020	08-Jul-2020
Determinand	Accred.	SOP	Type	Units	LOD		
pH	U	1010	10:1		N/A	8.8	9.7
Ammonium	U	1220	10:1	mg/l	0.050	0.11	< 0.050
Sulphate	U	1220	10:1	mg/l	1.0	I/S	< 1.0
Cyanide (Total)	U	1300	10:1	mg/l	0.050	I/S	< 0.050
Cyanide (Free)	U	1300	10:1	mg/l	0.050	I/S	< 0.050
Sulphide	U	1325	10:1	mg/l	0.050	I/S	< 0.050
Arsenic (Dissolved)	U	1450	10:1	µg/l	1.0	2.6	1.1
Boron (Dissolved)	U	1450	10:1	µg/l	20	< 20	24
Cadmium (Dissolved)	U	1450	10:1	µg/l	0.080	< 0.080	< 0.080
Chromium (Dissolved)	U	1450	10:1	µg/l	1.0	< 1.0	< 1.0
Copper (Dissolved)	U	1450	10:1	µg/l	1.0	2.9	1.5
Mercury (Dissolved)	U	1450	10:1	µg/l	0.50	< 0.50	< 0.50
Nickel (Dissolved)	U	1450	10:1	µg/l	1.0	< 1.0	< 1.0
Lead (Dissolved)	U	1450	10:1	µg/l	1.0	2.5	< 1.0
Selenium (Dissolved)	U	1450	10:1	µg/l	1.0	< 1.0	< 1.0
Vanadium (Dissolved)	U	1450	10:1	µg/l	1.0	2.1	< 1.0
Zinc (Dissolved)	U	1450	10:1	µg/l	1.0	< 1.0	< 1.0
Chromium (Hexavalent)	U	1490	10:1	µg/l	20	[B] I/S	[B] < 20
Total TPH >C10-C40	U	1670	10:1	µg/l	10	< 10	< 10
Naphthalene	U	1700	10:1	µg/l	0.10	I/S	< 0.10
Acenaphthylene	U	1700	10:1	µg/l	0.10	I/S	< 0.10
Acenaphthene	U	1700	10:1	µg/l	0.10	I/S	< 0.10
Fluorene	U	1700	10:1	µg/l	0.10	I/S	< 0.10
Phenanthrene	U	1700	10:1	µg/l	0.10	I/S	< 0.10
Anthracene	U	1700	10:1	µg/l	0.10	I/S	< 0.10
Fluoranthene	U	1700	10:1	µg/l	0.10	I/S	< 0.10
Pyrene	U	1700	10:1	µg/l	0.10	I/S	< 0.10
Benzo[a]anthracene	U	1700	10:1	µg/l	0.10	I/S	< 0.10
Chrysene	N	1700	10:1	µg/l	0.10	I/S	< 0.10
Benzo[b]fluoranthene	U	1700	10:1	µg/l	0.10	I/S	< 0.10
Benzo[k]fluoranthene	U	1700	10:1	µg/l	0.10	I/S	< 0.10
Benzo[a]pyrene	U	1700	10:1	µg/l	0.10	I/S	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	10:1	µg/l	0.10	I/S	< 0.10
Dibenz(a,h)Anthracene	U	1700	10:1	µg/l	0.10	I/S	< 0.10
Benzo[g,h,i]perylene	U	1700	10:1	µg/l	0.10	I/S	< 0.10
Total Of 16 PAH's	N	1700	10:1	µg/l	2.0	I/S	< 2.0
Benzene	U	1760	10:1	µg/l	1.0	I/S	< 1.0
Toluene	U	1760	10:1	µg/l	1.0	I/S	< 1.0
Ethylbenzene	U	1760	10:1	µg/l	1.0	I/S	< 1.0

Results - Leachate

Project: Q0281 Porthcawl Drainage Scheme

Client: Quantum Geotechnic Ltd	Chemtest Job No.:		20-17839	20-17839	20-17839			
Quotation No.: Q20-20173	Chemtest Sample ID.:		1030440	1030441	1030446			
	Client Sample ID.:		1	2	2			
	Sample Location:		TP03	TP04	TP09			
	Sample Type:		SOIL	SOIL	SOIL			
	Top Depth (m):		0.2	0.5	0.5			
	Date Sampled:		08-Jul-2020	08-Jul-2020	08-Jul-2020			
Determinand	Accred.	SOP	Type	Units	LOD			
m & p-Xylene	U	1760	10:1	µg/l	1.0	I/S	< 1.0	< 1.0
o-Xylene	U	1760	10:1	µg/l	1.0	I/S	< 1.0	< 1.0
Total Phenols	U	1920	10:1	mg/l	0.030	I/S	< 0.030	< 0.030

Results - Soil

Project: Q0281 Porthcawl Drainage Scheme

Client: Quantum Geotechnic Ltd		Chemtest Job No.:		20-17839	20-17839	20-17839	20-17839	20-17839	20-17839	20-17839	20-17839	20-17839	20-17839
Quotation No.: Q20-20173		Chemtest Sample ID.:		1030438	1030439	1030440	1030441	1030442	1030443	1030444	1030445	1030446	
	Client Sample ID.:	2	2	1	2	2	2	2	2	2	3	2	
	Sample Location:	TP01	TP02	TP03	TP04	TP05	TP06	TP06	TP07	TP07	TP07	TP09	
	Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	
	Top Depth (m):	0.2	0.5	0.2	0.5	0.5	0.5	0.5	0.5	0.3	1.0	0.5	
	Bottom Depth (m):	0.5											
	Date Sampled:	08-Jul-2020	08-Jul-2020	08-Jul-2020	08-Jul-2020	08-Jul-2020	08-Jul-2020	08-Jul-2020	08-Jul-2020	08-Jul-2020	08-Jul-2020	08-Jul-2020	
	Asbestos Lab:	DURHAM		DURHAM		DURHAM		DURHAM	DURHAM	DURHAM			
Determinand	Accred.	SOP	Units	LOD									
ACM Type	U	2192		N/A	-		-		-		-		
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected		No Asbestos Detected		No Asbestos Detected	No Asbestos Detected	No Asbestos Detected		
ACM Detection Stage	U	2192		N/A	-		-		-		-		
Moisture	N	2030	%	0.020	14	5.1	16	16	19	19	16	5.9	18
Soil Colour	N	2040		N/A		Brown	Brown	Brown				Brown	Brown
Other Material	N	2040		N/A		Stones	None	None				None	Stones
Soil Texture	N	2040		N/A		Sand	Sand	Sand				Sand	Sand
Clostridium perfringens (Subcon)	SN		cfu/g	N/A	>15.000		>15.000		>15.000	>15.000	>15.000		
Total Coliforms (Subcon)	SN		cfu/g	N/A	>1.500		640		20	370	720		
pH	M	2010		4.0	8.5		8.5	8.5	8.4	8.5	8.4		8.3
pH (2.5:1)	N	2010		4.0		8.6	8.5	8.5				8.6	8.3
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	0.66		0.50	< 0.40	0.54	0.53	0.55		0.40
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Sulphate (2:1 Extract)	M	2120	mg/kg	20		< 20	< 20	< 20				< 20	< 20
Total Sulphur	M	2175	%	0.010	0.021	0.016	0.016	0.015	0.018	0.019	0.020	0.014	0.019
Cyanide (Free)	M	2300	mg/kg	0.50			< 0.50	< 0.50					< 0.50
Cyanide (Total)	M	2300	mg/kg	0.50	< 0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50		< 0.50
Thiocyanate	M	2300	mg/kg	5.0	< 5.0		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0		
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50			1.3	2.2					1.3
Ammonium (Water Soluble)	M	2120	g/l	0.01			< 0.01	< 0.01					< 0.01
Iron (Total)	N	2430	mg/kg	100	15000		13000		12000	13000	14000		
Sulphate (Acid Soluble)	M	2430	%	0.010		0.039	0.046	0.043				0.024	0.031
Arsenic	M	2450	mg/kg	1.0	15		19	18	17	18	19		17
Barium	M	2450	mg/kg	10	75		46		44	51	55		
Beryllium	U	2450	mg/kg	1.0	< 1.0		< 1.0		< 1.0	< 1.0	< 1.0		
Cadmium	M	2450	mg/kg	0.10	0.30		0.23	0.21	0.18	0.22	0.24		0.15
Chromium	M	2450	mg/kg	1.0	22		9.7	9.2	8.6	9.6	11		7.8
Copper	M	2450	mg/kg	0.50	9.5		6.2	6.2	6.4	7.6	8.4		8.7
Mercury	M	2450	mg/kg	0.10	< 0.10		0.11	< 0.10	< 0.10	< 0.10	< 0.10		< 0.10
Nickel	M	2450	mg/kg	0.50	11		9.1	8.9	8.6	9.7	10		8.0
Lead	M	2450	mg/kg	0.50	44		28	26	26	33	36		26
Selenium	M	2450	mg/kg	0.20			< 0.20	< 0.20					< 0.20
Vanadium	U	2450	mg/kg	5.0	26		19	18	18	18	22		16
Zinc	M	2450	mg/kg	0.50	68		43	41	40	47	51		82
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50		< 0.50
Organic Matter	M	2625	%	0.40	2.2		1.1		1.3	1.2	1.9		

Results - Soil

Project: Q0281 Porthcawl Drainage Scheme

Client: Quantum Geotechnic Ltd		Chemtest Job No.:		20-17839	20-17839	20-17839	20-17839	20-17839	20-17839	20-17839	20-17839	20-17839
Quotation No.: Q20-20173		Chemtest Sample ID.:		1030438	1030439	1030440	1030441	1030442	1030443	1030444	1030445	1030446
Client Sample ID.:		2	2	1	2	2	2	2	2	3	2	
Sample Location:		TP01	TP02	TP03	TP04	TP05	TP06	TP07	TP07	TP09		
Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL		
Top Depth (m):		0.2	0.5	0.2	0.5	0.5	0.5	0.5	0.3	1.0	0.5	
Bottom Depth (m):		0.5										
Date Sampled:		08-Jul-2020	08-Jul-2020	08-Jul-2020	08-Jul-2020	08-Jul-2020	08-Jul-2020	08-Jul-2020	08-Jul-2020	08-Jul-2020	08-Jul-2020	08-Jul-2020
Asbestos Lab:		DURHAM		DURHAM		DURHAM		DURHAM	DURHAM	DURHAM		
Determinand	Accred.	SOP	Units	LOD								
Total TPH >C6-C40	M	2670	mg/kg	10	66		< 10		< 10	< 10		
Naphthalene	M	2700	mg/kg	0.10	< 0.10		< 0.10	< 0.10	< 0.10	< 0.10		< 0.10
Acenaphthylene	M	2700	mg/kg	0.10	< 0.10		< 0.10	< 0.10	< 0.10	< 0.10		< 0.10
Acenaphthene	M	2700	mg/kg	0.10	< 0.10		< 0.10	< 0.10	< 0.10	< 0.10		< 0.10
Fluorene	M	2700	mg/kg	0.10	< 0.10		< 0.10	< 0.10	< 0.10	< 0.10		< 0.10
Phenanthrene	M	2700	mg/kg	0.10	< 0.10		< 0.10	< 0.10	< 0.10	< 0.10		< 0.10
Anthracene	M	2700	mg/kg	0.10	< 0.10		< 0.10	< 0.10	< 0.10	< 0.10		< 0.10
Fluoranthene	M	2700	mg/kg	0.10	0.71		< 0.10	< 0.10	< 0.10	< 0.10		< 0.10
Pyrene	M	2700	mg/kg	0.10	0.97		< 0.10	< 0.10	< 0.10	< 0.10		< 0.10
Benzo[a]anthracene	M	2700	mg/kg	0.10	< 0.10		< 0.10	< 0.10	< 0.10	< 0.10		< 0.10
Chrysene	M	2700	mg/kg	0.10	< 0.10		< 0.10	< 0.10	< 0.10	< 0.10		< 0.10
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	< 0.10		< 0.10	< 0.10	< 0.10	< 0.10		< 0.10
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	< 0.10		< 0.10	< 0.10	< 0.10	< 0.10		< 0.10
Benzo[a]pyrene	M	2700	mg/kg	0.10	< 0.10		< 0.10	< 0.10	< 0.10	< 0.10		< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	< 0.10		< 0.10	< 0.10	< 0.10	< 0.10		< 0.10
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	< 0.10		< 0.10	< 0.10	< 0.10	< 0.10		< 0.10
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	< 0.10		< 0.10	< 0.10	< 0.10	< 0.10		< 0.10
Total Of 16 PAH's	M	2700	mg/kg	2.0	< 2.0		< 2.0	< 2.0	< 2.0	< 2.0		< 2.0
Dichlorodifluoromethane	U	2760	µg/kg	1.0	< 1.0		< 1.0	< 1.0	< 1.0	< 1.0		
Chloromethane	M	2760	µg/kg	1.0	< 1.0		< 1.0	< 1.0	< 1.0	< 1.0		
Vinyl Chloride	M	2760	µg/kg	1.0	< 1.0		< 1.0	< 1.0	< 1.0	< 1.0		
Bromomethane	M	2760	µg/kg	20	< 20		< 20	< 20	< 20	< 20		
Chloroethane	U	2760	µg/kg	2.0	< 2.0		< 2.0	< 2.0	< 2.0	< 2.0		
Trichlorofluoromethane	M	2760	µg/kg	1.0	< 1.0		< 1.0	< 1.0	< 1.0	< 1.0		
1,1-Dichloroethene	M	2760	mg/kg	1.0	< 1.0		< 1.0	< 1.0	< 1.0	< 1.0		
Trans 1,2-Dichloroethene	M	2760	mg/kg	1.0	< 1.0		< 1.0	< 1.0	< 1.0	< 1.0		
1,1-Dichloroethane	M	2760	µg/kg	1.0	< 1.0		< 1.0	< 1.0	< 1.0	< 1.0		
cis 1,2-Dichloroethene	M	2760	µg/kg	1.0	< 1.0		< 1.0	< 1.0	< 1.0	< 1.0		
Bromochloromethane	U	2760	µg/kg	5.0	< 5.0		< 5.0	< 5.0	< 5.0	< 5.0		
Trichloromethane	M	2760	µg/kg	1.0	< 1.0		< 1.0	< 1.0	< 1.0	< 1.0		
1,1,1-Trichloroethane	M	2760	µg/kg	1.0	< 1.0		< 1.0	< 1.0	< 1.0	< 1.0		
Tetrachloromethane	M	2760	µg/kg	1.0	< 1.0		< 1.0	< 1.0	< 1.0	< 1.0		
1,1-Dichloropropene	U	2760	µg/kg	1.0	< 1.0		< 1.0	< 1.0	< 1.0	< 1.0		
Benzene	M	2760	µg/kg	1.0	< 1.0		< 1.0	< 1.0	< 1.0	< 1.0		< 1.0
1,2-Dichloroethane	M	2760	µg/kg	2.0	< 2.0		< 2.0	< 2.0	< 2.0	< 2.0		< 2.0
Trichloroethene	N	2760	µg/kg	1.0	< 1.0		< 1.0	< 1.0	< 1.0	< 1.0		
1,2-Dichloropropane	M	2760	µg/kg	1.0	< 1.0		< 1.0	< 1.0	< 1.0	< 1.0		

Results - Soil

Project: Q0281 Porthcawl Drainage Scheme

Client: Quantum Geotechnic Ltd		Chemtest Job No.:		20-17839	20-17839	20-17839	20-17839	20-17839	20-17839	20-17839	20-17839	20-17839
Quotation No.: Q20-20173		Chemtest Sample ID.:		1030438	1030439	1030440	1030441	1030442	1030443	1030444	1030445	1030446
Client Sample ID.:		2	2	1	2	2	2	2	2	3	2	
Sample Location:		TP01	TP02	TP03	TP04	TP05	TP06	TP06	TP07	TP07	TP09	
Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	
Top Depth (m):		0.2	0.5	0.2	0.5	0.5	0.5	0.5	0.3	1.0	0.5	
Bottom Depth (m):		0.5										
Date Sampled:		08-Jul-2020	08-Jul-2020	08-Jul-2020	08-Jul-2020	08-Jul-2020	08-Jul-2020	08-Jul-2020	08-Jul-2020	08-Jul-2020	08-Jul-2020	
Asbestos Lab:		DURHAM		DURHAM		DURHAM		DURHAM	DURHAM	DURHAM		
Determinand	Accred.	SOP	Units	LOD								
Dibromomethane	M	2760	µg/kg	1.0	< 1.0		< 1.0		< 1.0	< 1.0		
Bromodichloromethane	M	2760	µg/kg	5.0	< 5.0		< 5.0		< 5.0	< 5.0		
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10		< 10		< 10	< 10		
Toluene	M	2760	µg/kg	1.0	< 1.0		< 1.0	< 1.0	< 1.0	< 1.0		< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10		< 10		< 10	< 10		
1,1,2-Trichloroethane	M	2760	µg/kg	10	< 10		< 10		< 10	< 10		
Tetrachloroethene	M	2760	µg/kg	1.0	< 1.0		< 1.0		< 1.0	< 1.0		
1,3-Dichloropropane	U	2760	µg/kg	2.0	< 2.0		< 2.0		< 2.0	< 2.0		
Dibromochloromethane	U	2760	µg/kg	10	< 10		< 10		< 10	< 10		
1,2-Dibromoethane	M	2760	µg/kg	5.0	< 5.0		< 5.0		< 5.0	< 5.0		
Chlorobenzene	M	2760	µg/kg	1.0	< 1.0		< 1.0		< 1.0	< 1.0		
1,1,1,2-Tetrachloroethane	M	2760	µg/kg	2.0	< 2.0		< 2.0		< 2.0	< 2.0		
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0		< 1.0	< 1.0	< 1.0	< 1.0		< 1.0
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0		< 1.0	< 1.0	< 1.0	< 1.0		< 1.0
o-Xylene	M	2760	µg/kg	1.0	< 1.0		< 1.0	< 1.0	< 1.0	< 1.0		< 1.0
Styrene	M	2760	µg/kg	1.0	< 1.0		< 1.0		< 1.0	< 1.0		
Tribromomethane	U	2760	µg/kg	1.0	< 1.0		< 1.0		< 1.0	< 1.0		
Isopropylbenzene	M	2760	µg/kg	1.0	< 1.0		< 1.0		< 1.0	< 1.0		
Bromobenzene	M	2760	µg/kg	1.0	< 1.0		< 1.0		< 1.0	< 1.0		
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50		< 50		< 50	< 50		
N-Propylbenzene	U	2760	µg/kg	1.0	< 1.0		< 1.0		< 1.0	< 1.0		
2-Chlorotoluene	M	2760	µg/kg	1.0	< 1.0		< 1.0		< 1.0	< 1.0		
1,3,5-Trimethylbenzene	M	2760	µg/kg	1.0	< 1.0		< 1.0		< 1.0	< 1.0		
4-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0		< 1.0		< 1.0	< 1.0		
Tert-Butylbenzene	U	2760	µg/kg	1.0	< 1.0		< 1.0		< 1.0	< 1.0		
1,2,4-Trimethylbenzene	M	2760	µg/kg	1.0	< 1.0		< 1.0		< 1.0	< 1.0		
Sec-Butylbenzene	U	2760	µg/kg	1.0	< 1.0		< 1.0		< 1.0	< 1.0		
1,3-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0		< 1.0		< 1.0	< 1.0		
4-Isopropyltoluene	U	2760	µg/kg	1.0	< 1.0		< 1.0		< 1.0	< 1.0		
1,4-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0		< 1.0		< 1.0	< 1.0		
N-Butylbenzene	U	2760	µg/kg	1.0	< 1.0		< 1.0		< 1.0	< 1.0		
1,2-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0		< 1.0		< 1.0	< 1.0		
1,2-Dibromo-3-Chloropropane	U	2760	µg/kg	50	< 50		< 50		< 50	< 50		
1,2,4-Trichlorobenzene	M	2760	µg/kg	1.0	< 1.0		< 1.0		< 1.0	< 1.0		
Hexachlorobutadiene	U	2760	µg/kg	1.0	< 1.0		< 1.0		< 1.0	< 1.0		
1,2,3-Trichlorobenzene	U	2760	µg/kg	2.0	< 2.0		< 2.0		< 2.0	< 2.0		
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	< 1.0		< 1.0		< 1.0	< 1.0		

Results - Soil

Project: Q0281 Porthcawl Drainage Scheme

Client: Quantum Geotechnic Ltd		Chemtest Job No.:		20-17839	20-17839	20-17839	20-17839	20-17839	20-17839	20-17839	20-17839	20-17839
Quotation No.: Q20-20173		Chemtest Sample ID.:		1030438	1030439	1030440	1030441	1030442	1030443	1030444	1030445	1030446
Client Sample ID.:		2	2	1	2	2	2	2	2	3	2	
Sample Location:		TP01	TP02	TP03	TP04	TP05	TP06	TP07	TP07	TP09		
Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL		
Top Depth (m):		0.2	0.5	0.2	0.5	0.5	0.5	0.5	0.3	1.0	0.5	
Bottom Depth (m):		0.5										
Date Sampled:		08-Jul-2020	08-Jul-2020	08-Jul-2020	08-Jul-2020	08-Jul-2020	08-Jul-2020	08-Jul-2020	08-Jul-2020	08-Jul-2020	08-Jul-2020	
Asbestos Lab:		DURHAM		DURHAM		DURHAM		DURHAM	DURHAM	DURHAM		
Determinand	Accred.	SOP	Units	LOD								
N-Nitrosodimethylamine	M	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50	< 0.50	
Phenol	M	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50	< 0.50	
2-Chlorophenol	M	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50	< 0.50	
Bis-(2-Chloroethyl)Ether	M	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50	< 0.50	
1,3-Dichlorobenzene	M	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50	< 0.50	
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50	< 0.50	
1,2-Dichlorobenzene	M	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50	< 0.50	
2-Methylphenol	M	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50	< 0.50	
Bis(2-Chloroisopropyl)Ether	M	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50	< 0.50	
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50	< 0.50	
N-Nitrosodi-n-propylamine	M	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50	< 0.50	
4-Methylphenol	M	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50	< 0.50	
Nitrobenzene	M	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50	< 0.50	
Isophorone	M	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50	< 0.50	
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50	< 0.50	
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50	< 0.50	
Bis(2-Chloroethoxy)Methane	M	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50	< 0.50	
2,4-Dichlorophenol	M	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50	< 0.50	
1,2,4-Trichlorobenzene	M	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50	< 0.50	
Naphthalene	M	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50	< 0.50	
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50	< 0.50	
Hexachlorobutadiene	M	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50	< 0.50	
4-Chloro-3-Methylphenol	M	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50	< 0.50	
2-Methylnaphthalene	M	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50	< 0.50	
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50	< 0.50	
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50	< 0.50	
2,4,6-Trichlorophenol	M	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50	< 0.50	
2,4,5-Trichlorophenol	M	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50	< 0.50	
2-Chloronaphthalene	M	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50	< 0.50	
2-Nitroaniline	M	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50	< 0.50	
Acenaphthylene	M	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50	< 0.50	
Dimethylphthalate	M	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50	< 0.50	
2,6-Dinitrotoluene	M	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50	< 0.50	
Acenaphthene	M	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50	< 0.50	
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50	< 0.50	
Dibenzofuran	M	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50	< 0.50	
4-Chlorophenylphenylether	M	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50	< 0.50	

Results - Soil

Project: Q0281 Porthcawl Drainage Scheme

Client: Quantum Geotechnic Ltd		Chemtest Job No.:		20-17839	20-17839	20-17839	20-17839	20-17839	20-17839	20-17839	20-17839	20-17839
Quotation No.: Q20-20173		Chemtest Sample ID.:		1030438	1030439	1030440	1030441	1030442	1030443	1030444	1030445	1030446
Client Sample ID.:		2	2	1	2	2	2	2	2	3	2	
Sample Location:		TP01	TP02	TP03	TP04	TP05	TP06	TP07	TP07	TP09		
Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL		
Top Depth (m):		0.2	0.5	0.2	0.5	0.5	0.5	0.5	0.3	1.0	0.5	
Bottom Depth (m):		0.5										
Date Sampled:		08-Jul-2020	08-Jul-2020	08-Jul-2020	08-Jul-2020	08-Jul-2020	08-Jul-2020	08-Jul-2020	08-Jul-2020	08-Jul-2020	08-Jul-2020	
Asbestos Lab:		DURHAM		DURHAM		DURHAM	DURHAM	DURHAM	DURHAM			
Determinand	Accred.	SOP	Units	LOD								
2,4-Dinitrotoluene	M	2790	mg/kg	0.50	< 0.50		< 0.50	< 0.50	< 0.50	< 0.50		
Fluorene	M	2790	mg/kg	0.50	< 0.50		< 0.50	< 0.50	< 0.50	< 0.50		
Diethyl Phthalate	M	2790	mg/kg	0.50	< 0.50		< 0.50	< 0.50	< 0.50	< 0.50		
4-Nitroaniline	M	2790	mg/kg	0.50	< 0.50		< 0.50	< 0.50	< 0.50	< 0.50		
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50		< 0.50	< 0.50	< 0.50	< 0.50		
Azobenzene	M	2790	mg/kg	0.50	< 0.50		< 0.50	< 0.50	< 0.50	< 0.50		
4-Bromophenylphenyl Ether	M	2790	mg/kg	0.50	< 0.50		< 0.50	< 0.50	< 0.50	< 0.50		
Hexachlorobenzene	M	2790	mg/kg	0.50	< 0.50		< 0.50	< 0.50	< 0.50	< 0.50		
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50		< 0.50	< 0.50	< 0.50	< 0.50		
Phenanthrene	M	2790	mg/kg	0.50	< 0.50		< 0.50	< 0.50	< 0.50	< 0.50		
Anthracene	M	2790	mg/kg	0.50	< 0.50		< 0.50	< 0.50	< 0.50	< 0.50		
Carbazole	M	2790	mg/kg	0.50	< 0.50		< 0.50	< 0.50	< 0.50	< 0.50		
Di-N-Butyl Phthalate	M	2790	mg/kg	0.50	< 0.50		< 0.50	< 0.50	< 0.50	< 0.50		
Fluoranthene	M	2790	mg/kg	0.50	< 0.50		< 0.50	< 0.50	< 0.50	< 0.50		
Pyrene	M	2790	mg/kg	0.50	< 0.50		< 0.50	< 0.50	< 0.50	< 0.50		
Butylbenzyl Phthalate	M	2790	mg/kg	0.50	< 0.50		< 0.50	< 0.50	< 0.50	< 0.50		
Benzo[a]anthracene	M	2790	mg/kg	0.50	< 0.50		< 0.50	< 0.50	< 0.50	< 0.50		
Chrysene	M	2790	mg/kg	0.50	< 0.50		< 0.50	< 0.50	< 0.50	< 0.50		
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50		< 0.50	< 0.50	< 0.50	< 0.50		
Di-N-Octyl Phthalate	M	2790	mg/kg	0.50	< 0.50		< 0.50	< 0.50	< 0.50	< 0.50		
Benzo[b]fluoranthene	M	2790	mg/kg	0.50	< 0.50		< 0.50	< 0.50	< 0.50	< 0.50		
Benzo[k]fluoranthene	M	2790	mg/kg	0.50	< 0.50		< 0.50	< 0.50	< 0.50	< 0.50		
Benzo[a]pyrene	M	2790	mg/kg	0.50	< 0.50		< 0.50	< 0.50	< 0.50	< 0.50		
Indeno(1,2,3-c,d)Pyrene	M	2790	mg/kg	0.50	< 0.50		< 0.50	< 0.50	< 0.50	< 0.50		
Dibenz(a,h)Anthracene	M	2790	mg/kg	0.50	< 0.50		< 0.50	< 0.50	< 0.50	< 0.50		
Benzo[g,h,i]perylene	M	2790	mg/kg	0.50	< 0.50		< 0.50	< 0.50	< 0.50	< 0.50		
Total Phenols	M	2920	mg/kg	0.30	< 0.30		< 0.30	< 0.30	< 0.30	< 0.30		

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request. The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1030440		1	TP03	08-Jul-2020	B	Amber Glass 250ml
1030440		1	TP03	08-Jul-2020	B	Amber Glass 60ml
1030440		1	TP03	08-Jul-2020	B	Plastic Tub 500g
1030441		2	TP04	08-Jul-2020	B	Amber Glass 250ml
1030441		2	TP04	08-Jul-2020	B	Amber Glass 60ml
1030441		2	TP04	08-Jul-2020	B	Plastic Tub 500g
1030446		2	TP09	08-Jul-2020	B	Amber Glass 250ml
1030446		2	TP09	08-Jul-2020	B	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1325	Sulphide in Waters	Sulphides	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using N,N-dimethyl-p-phenylenediamine.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazine.
1670	Total Petroleum Hydrocarbons (TPH) in Waters by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO	Pentane extraction / GC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenzo[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2175	Total Sulphur in Soils	Total Sulphur	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2325	Sulphide in Soils	Sulphide	Steam distillation with sulphuric acid / analysis by 'Aquakem 600' Discrete Analyser, using N,N-dimethyl-p-phenylenediamine.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.

Test Methods

SOP	Title	Parameters included	Method summary
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

customerservices@chemtest.com



Final Report

Report No.: 20-22999-1
Initial Date of Issue: 04-Sep-2020
Client: Quantum Geotechnic Ltd
Client Address: Plas Newydd
Llanedi
Pontarddulais
Swansea
SA4 0FQ
Contact(s): Steffan Picton
Project: Q0281
Quotation No.: **Date Received:** 28-Aug-2020
Order No.: **Date Instructed:** 28-Aug-2020
No. of Samples: 3
Turnaround (Wkdays): 5 **Results Due:** 04-Sep-2020
Date Approved: 04-Sep-2020

Approved By:

Details: Glynn Harvey, Technical Manager

Results - Leachate

Project: Q0281

Client: Quantum Geotechnic Ltd		Chemtest Job No.:			20-22999	20-22999	20-22999
Quotation No.:		Chemtest Sample ID.:			1056040	1056041	1056042
Order No.:		Client Sample Ref.:			1	2	2
		Client Sample ID.:			ES1	ES2	ES2
		Sample Location:			TP03	TP04	TP09
		Sample Type:			SOIL	SOIL	SOIL
		Top Depth (m):			0.2	0.5	0.5
		Date Sampled:			26-Aug-2020	26-Aug-2020	26-Aug-2020
Determinand	Accred.	SOP	Type	Units	LOD		
pH	U	1010	10:1		N/A	8.3	9.0
Ammonium	U	1220	10:1	mg/l	0.050	0.39	0.088
Sulphate	U	1220	10:1	mg/l	1.0	1.3	< 1.0
Cyanide (Total)	U	1300	10:1	mg/l	0.050	< 0.050	< 0.050
Cyanide (Free)	U	1300	10:1	mg/l	0.050	< 0.050	< 0.050
Sulphide	U	1325	10:1	mg/l	0.050	< 0.050	< 0.050
Arsenic (Dissolved)	U	1450	10:1	µg/l	1.0	3.0	4.1
Boron (Dissolved)	U	1450	10:1	µg/l	20	< 20	< 20
Cadmium (Dissolved)	U	1450	10:1	µg/l	0.080	< 0.080	< 0.080
Chromium (Dissolved)	U	1450	10:1	µg/l	1.0	< 1.0	< 1.0
Copper (Dissolved)	U	1450	10:1	µg/l	1.0	1.9	1.5
Mercury (Dissolved)	U	1450	10:1	µg/l	0.50	< 0.50	< 0.50
Nickel (Dissolved)	U	1450	10:1	µg/l	1.0	< 1.0	< 1.0
Lead (Dissolved)	U	1450	10:1	µg/l	1.0	1.8	< 1.0
Selenium (Dissolved)	U	1450	10:1	µg/l	1.0	< 1.0	< 1.0
Vanadium (Dissolved)	U	1450	10:1	µg/l	1.0	2.2	2.6
Zinc (Dissolved)	U	1450	10:1	µg/l	1.0	3.7	2.5
Chromium (Hexavalent)	U	1490	10:1	µg/l	20	< 20	< 20
Total TPH >C10-C40	U	1670	10:1	µg/l	10	< 10	< 10
Naphthalene	U	1700	10:1	µg/l	0.10	< 0.10	< 0.10
Acenaphthylene	U	1700	10:1	µg/l	0.10	< 0.10	< 0.10
Acenaphthene	U	1700	10:1	µg/l	0.10	< 0.10	< 0.10
Fluorene	U	1700	10:1	µg/l	0.10	< 0.10	< 0.10
Phenanthrene	U	1700	10:1	µg/l	0.10	< 0.10	< 0.10
Anthracene	U	1700	10:1	µg/l	0.10	< 0.10	< 0.10
Fluoranthene	U	1700	10:1	µg/l	0.10	< 0.10	< 0.10
Pyrene	U	1700	10:1	µg/l	0.10	< 0.10	< 0.10
Benzo[a]anthracene	U	1700	10:1	µg/l	0.10	< 0.10	< 0.10
Chrysene	N	1700	10:1	µg/l	0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	1700	10:1	µg/l	0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	1700	10:1	µg/l	0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	1700	10:1	µg/l	0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	10:1	µg/l	0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	10:1	µg/l	0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	10:1	µg/l	0.10	< 0.10	< 0.10
Total Of 16 PAH's	N	1700	10:1	µg/l	2.0	< 2.0	< 2.0
Benzene	U	1760	10:1	µg/l	1.0	< 1.0	< 1.0
Toluene	U	1760	10:1	µg/l	1.0	< 1.0	< 1.0

Results - Leachate

Project: Q0281

Client: Quantum Geotechnic Ltd	Chemtest Job No.:					20-22999	20-22999	20-22999
Quotation No.:	Chemtest Sample ID.:					1056040	1056041	1056042
Order No.:	Client Sample Ref.:					1	2	2
	Client Sample ID.:					ES1	ES2	ES2
	Sample Location:					TP03	TP04	TP09
	Sample Type:					SOIL	SOIL	SOIL
	Top Depth (m):					0.2	0.5	0.5
	Date Sampled:					26-Aug-2020	26-Aug-2020	26-Aug-2020
Determinand	Accred.	SOP	Type	Units	LOD			
Ethylbenzene	U	1760	10:1	µg/l	1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	1760	10:1	µg/l	1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	1760	10:1	µg/l	1.0	< 1.0	< 1.0	< 1.0
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030	< 0.030	< 0.030

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1325	Sulphide in Waters	Sulphides	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using N,N-dimethyl-pphenylenediamine.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazine.
1670	Total Petroleum Hydrocarbons (TPH) in Waters by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO	Pentane extraction / GC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	Compliance Test for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

customerservices@chemtest.com